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CIS

NATURAL GAS POLICY AND REGULATORY ISSUES

HEARINGS

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

TO EXPLORE EXISTING NATURAL GAS LAW AND THE RELATED REGULATORY STRUCTURE TO DETERMINE THE NATURE AND EXTENT OF PROBLEMS THAT ARE OCCURRING AND POSSIBLE SOLUTIONS TO THESE PROBLEMS

MARCH 22 AND 23, 1982

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NATURAL GAS POLICY AND REGULATORY ISSUES

MONDAY, MARCH 22, 1982

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m., in room 3110, Dirksen Office Building, Hon. James A. McClure, chairman, presiding.

Present: Senators McClure, Wallop, Warner, Humphrey, Nickles, Jackson, Johnston, Bumpers, Ford, and Metzenbaum.

Also present: Charles A. Trabandt, chief counsel; Howard Useem, professional staff member; and Elizabeth Moler, counsel for the minority.

The CHAIRMAN. The committee will come to order. Before turning to the matter at hand this morning, I want to make a brief comment with respect to the President's veto of the standby petroleum allocation bill.

A number of people have understandably asked the question where do we go from here? There are a number of options which are available, and they are under consideration at the present time. I don't think there is any doubt that those of us who worked for so long and so hard to try to produce a piece of legislation are disappointed in the Presidential veto. I think there is no doubt based upon the vote in the Senate that the Senate could muster the votes to override that veto.

There is some question with respect to whether or not that could happen in the House, and before taking any action with respect to that legislation, I will be in consultation with those in the House of Representatives who worked so hard to get that bill passed in the House and produce the consensus that was necessary to get it through the conference.

I say that in disappointment, not in bitterness, because the President decided that the marketplace could indeed allocate supplies better than can Government, and I agree with that statement. But I think all of us who have looked at the question over a long period of time are convinced that at some level of shortage the market allocation system simply does not work. Most of us on this committee have lived through a couple of those circumstances, and in 1979 it may well be true that the Government intervention made the situation worse, but there can be no doubt, at least there is no doubt in my mind, that when the phone is ringing off the wall, when a farmer walks in from his field with a tractor that has no diesel to operate to put the crops in the ground, when the interstate truckers back up at truckstops along the interstate because they have no diesel to continue their run, when fishermen's boats are tied up at the dock at the wharf because they don't have enough fuel to go out and come back, that the market allocation system will not be permitted to result in that kind of a marketplace impact. I therefore think that it is fatuous for us to assume some kind of purity that indeed the market will work under every circumstance.

We must ask ourselves, however, that if the President does not desire that authority and says he would not use it if he had it, whether we are also somewhat fatuous in going through a legislative exercise which can only end up in a period of frustration.

I believe, however, that if we were to put it on the books and we had that kind of a circumstance, the President would see greater wisdom in it at that time than he apparently sees in it now, and so for a while we will, at least on my part, attempt to keep our powder dry as we examine the options that are available to us in the legislative forum.

Before moving to the subject that is at hand, I wonder if I——

Senator METZENBAUM. Does the Chairman intend to make an effort, to lead an effort to override the veto?

The CHAIRMAN. Gosh, I thought I said that plainly. I don't know.

Senator FORD. I understood it.

Senator METZENBAUM. I must have missed it. I apologize. I guess I looked aside. I apologize.

The CHAIRMAN. I just don't know. There are some options we have to look at. I think we have to determine what it is that the other people in the other body wish to do. There are some options to be exercised, and before going off halfcocked, I think we probably ought to examine those options.

Senator METZENBAUM. I just missed it. I'm sorry.

The CHAIRMAN. Are there any others who would desire to make any statements?

Senator JOHNSTON. Yes, a short one Mr. Chairman. First of all, I want to thank you for that statement. I think your leadership on this question of petroleum allocation has been outstanding. I think those who opposed the legislation honestly do not understand it.

It was permissible and discretionary with the President, not mandatory. The market allocation system will indeed work and will indeed work efficiently. It is not the question of working efficiently that we are concerned about in the event of a shortage. It is a question of price, and if we have one of those kinds of shortages, the price of gasoline, diesel, and other products is likely to be beyond the reach of the average American and beyond the reach of farmers. That price might be, for example, $5 a gallon and farmers already stretched to the limit cannot afford it, truckers can't afford it, and the average Americans can't afford it. They would see people making what truly then would be windfall profits, and I don't use that word lightly since I opposed windfall profits, but these would be windfall profits. If you had a blockading of the Straits of Hormuz, then the very social fabric that we have in this country could break down, and I would think the last thing that the oil companies would want to be placed in that position of being blamed for that, and that is indeed part of the reason why so many of the oil companies support this legislation. So I hope, Mr. Chairman, that as we look at that question and deal with our Members over on the House side that we can try to find a way to actually override that veto. I think that is decidedly in the national interest.

Unfortunately, you don't get to demonstrate that it is in the national interest unless you have an emergency. If we have one, and if we need that bill and don't have it, then the fat is really in the fire and we are in deep trouble.

A word about our hearings today, Mr. Chairman—I wish also to thank you for holding these hearings. They are held on the general subject as well as the considered pending legislation, particularly S. 2074 which my colleague, Senator Long, and I introduced, dealing with phased deregulation of natural gas.

I venture to say that we will not have one witness who will defend the Natural Gas Policy Act as presently written. I would be surprised to hear such a witness if he or she so states. The fact of the matter is that it is a seriously flawed piece of legislation. It badly needs changing, and I am not naive. I know the difficulties of changing the NGPA. I was involved in the last 30 years' war. I know it is going to be difficult to do so, but I don't think it is beyond hope that it could be done this session. It is unlikely, but it is not beyond hope because as we begin to examine this budget deficit and find out that additional revenues are needed, that measures such as deregulation of natural gas that not only produce large revenues but achieve a needed national goal will become more attractive to the White House .

In any event, it is very important that we get this process started because at some point we are going to have to change the Natural Gas Policy Act and at some point we are going to have to hammer out the difficult compromises on issues such as contract prices, vintage pricing and others.

If we do not change the Natural Gas Policy Act, Mr. Chairman, we are going to face that problem of a fly-up, that is, the sudden increase in natural gas prices which will occur January 1, 1985, which no one wants. We have got the problem of dislocation—that is, shortages in some areas, high prices in some areas, surpluses in other areas, low prices in other areas—the kind of economic dislocation that simply is inadmissible in this country. The problem of lack of incentive for some depths of gas, for example, the so-called near-deep gas from wells between 10,000 and 15,000 feet, there may not be enough incentive to drill those wells now. The gas from those wells is priced at a fraction of the 107 price, with no real reason for the cost differential. And of course, there is the conservation bonus that we would receive as we begin to deregulate natural gas. It seems to me, Mr. Chairman, that our experience in the deregulation of crude oil should be a very strong object lesson to us in natural gas.

We were told here year after year that if we deregulated crude oil that prices would go up, that the increase in supply would not matter, that conservation would not occur because there was a lack of elasticity in consumption. We saw all of those things not to be true. We saw an increase in drilling. We saw an increase in production. We saw conservation that has resulted in perhaps 3 million barrels a day or more and lessened balance of trade deficits. We have seen the marketplace really begin to work. I hope we can seriously look at this question of natural gas deregulation and look at it from the standpoint of what we should have learned with crude oil.

Thank you, Mr. Chairman.

The **Chairman**. Thank you, Senator. Are there any others who would like to make any opening comment with respect to the veto?

Senator **Ford**. Mr. Chairman, I would like to say I want to associate myself with the first remarks of my distinguished friend from Louisiana about your leadership. The unanimity he talked about on natural gas is not necessarily here. I want to put that out on the board right quick, but I just say to you we have had enough of articles of faith in lieu of a practical solution, and I think it is time that we make an effort to do what we think is right, and I would encourage you to do what you can to see if we cannot override the veto of the President as it relates to his veto of the fuel allocation.

Senator **Jackson**. Mr. Chairman, I would like to associate myself with the remarks of the Senator from Kentucky. The Chair deserves great support for undertaking and taking the leadership of putting through the legislation to give the President the necessary emergency powers.

Clearly the marketplace so to speak is not going to solve this problem. I would also observe, too, Mr. Chairman, that we are sending the wrong signal to the international energy. They are going to relax. They are not going to feel the urgency in the event that we once again find ourselves in a crisis situation which could, as the Chairman, knows, happen at any time. Anyone who reads the intelligence reports on what is going on in the Persian Gulf area can't help but come to the conclusion that that is a highly volatile situation. The unwritten reports because of Poland, because of El Salvador and because of Afghanistan would be rather revealing if one could see what the Soviets are doing right now in Iran, switching sides in that conflict, now supporting Iran against Iraq with all that that involves in terms of jeopardy to the oil output of the Persian Gulf.

The **Chairman**. I thank the Senator from Washington. The Senator from Oklahoma?

Senator **Nickles**. Thank you, Mr. Chairman. I would like to disassociate myself from the comments made by our colleagues that were critical of the veto. I am very supportive of the President's veto, as the Chairman is well aware, and I have stated the opposite side of the case on numerous different occasions before this committee and before the Senate I was therefore, very pleased with the President's veto.

I think the veto sends the correct signal to the industry and also to the international community as to this administration's determination to and belief in the marketplace as being the best methodology to allocate that resource. I believe that this administration does believe in the market, and I hope that Congress will, and hopefully we won't have a battle in the Senate, and I know that would be first and foremost if it overrides the President's veto. I hope that won't happen because I think it would be a fallacy.

As I have stated before, we are still at that point of trying to determine whether or not the marketplace or this Congress and this bureaucracy or this administration can best allocate the scarce resource, and I personally believe the marketplace can and so hopefully that won't come up.

The CHAIRMAN. I thank the Senator from Oklahoma. I was sure the Senator would bring some certain balance to the discussion.

Senator METZENBAUM. Mr. Chairman, I merely have a brief statement. I certainly enjoy being given an opportunity to indicate my wholehearted, enthusiastic support for the legislation which the Chairman has authored, and which I believe is so much needed in the country.

With respect to my friend from Oklahoma and his comments concerning the free marketplace, I would like to point out to you that the Oklahoma State Legislature apparently doesn't think the free marketplace always works. They petitioned the Congress with respect to not deregulating natural gas prices and deferring any action in that respect. So I think that here are times when the Government offices have to be used in order to provide some protection to the people of the country and provide some stability. The free marketplace cannot always be counted on to work, as was indicated by that resolution of the Oklahoma Legislature, which, incidentally, was introduced by Senator Strom Thurmond of South Carolina.

Senator NICKLES. I appreciate the Senator's comments. I read that resolution. I used to be a member of the Oklahoma Senate, and they made mistakes when I was there, and I think they may have added to that.

The CHAIRMAN. All the errors were removed when you left?

Senator NICKLES. That's true.

OPENING STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The CHAIRMAN. This morning's hearing is on a different subject, although certainly a related subject, when we talk about energy policy.

Today's hearing is the first of two scheduled days of a series of hearings on the subject of natural gas policy and regulatory issues. This series will explore in great detail the existing natural gas law and the related regulatory structure to determine the nature and extent of problems that are occurring and possible solutions to these problems, so that these hearings will also encompass legislative proposals to modify existing law.

At the committee's November hearing we reviewed the implementation of title I of the Natural Gas Policy Act. While there was near unanimous agreement among the witnesses that the act is not operating properly, there was no clear consensus as to what the problems are or how they should be addressed.

Today's hearing will not only continue the committee's review of the NGPA's title I problems, but it will also extend to problems with the NGPA's other titles as well as those with the related gas statutes such as the Power Plant and Industrial Fuel Use Act. When the NGPA and other related gas statutes were created in

1978, they were predicated on a variety of long-term assumptions such as the size of the U.S. gas resource base, the elasticity of gas supply, and the world price of oil. Since 1978, developments have thrown many of the assumptions into question, and as a result, there is now question as to whether the NGPA can and will operate as Congress originally intended. Congress has already acted twice to remedy certain of these problems. Two years ago the House exercised a legislative veto to block the extension of incremental pricing, and last year Congress eliminated the Fuel Use Act's 1990 restriction on gas use by existing electric powerplants. As we all know, on March 1, the President announced that he would not seek legislation this year to accelerate the decontrol of natural gas. In Oklahoma, President Reagan indicated that the phasein of complete decontrol of natural gas would be another step which would help the world energy situation and one which would ultimately benefit the American people.

The hearings today are intended to identify problems with existing law and to provide the committee with a hearing record necessary to consider legislative options whenever it is deemed appropriate to proceed on the issues.

Appearing before us today and tomorrow is an extensive series of expert witnesses who will be able to discuss all aspects of the gas issue. Before proceeding to hearing from our distinguished colleagues who have been waiting patiently to be heard this morning, I ask other members of the committee if they have statements they would like to make at this time.

I will insert in the record at this point statements from Senator Levin and Senator Sasser.

[The prepared statements of Senator Levin and Senator Sasser follow:]

STATEMENT OF HON. CARL LEVIN, A U.S. SENATOR FROM THE STATE OF MICHIGAN

I appreciate the opportunity to participate in your hearings on the operation of the Natural Gas Policy Act. There has been so much speculation concerning possible changes in the law that I think the Energy Committee was wise to examine how the law is working and the effects of possible amendments.

I would like to stress my opposition to any moves to increase the price of natural gas any faster—whether such a speed-up be determined by legislative action or by rulings of the Federal Energy Regulatory Commission. I don't think our economy can stand any further acceleration of prices and I hope we can hold the line on natural gas costs.

The passage of the Natural Gas Policy Act should be viewed as having established a ceiling for natural gas price increases, not as setting a floor for further price escalation.

The economic impact of natural gas price increases is already causing great hardship in many states, including Michigan. Considered in conjunction with oil decontrol, cold winters, our economic distress, and the refusal of the Administration to adequately fund low-income fuel assistance and conservation programs, my state should not be expected to take any more.

I am also troubled by proposals to modify the curtailment policy included as part of the Natural Gas Policy Act. Under this program, the Congress established the order of priority for protecting the supplies of natural gas available in cases of supply disruptions of shortfalls. Such emergency planning seems only prudent and to do less would be irresponsible.

The concern with curtailment seems particularly well-founded given the President's recent action on curtailment plans for oil. The President just vetoed the Standby Petroleum Allocation Act. This bill, which passed the Senate 86–7, was strongly supported by the Energy Committee, which led the bipartisan fight for an allocation system for oil. I hope that the Senate and the Energy Committee are as diligent to protect natural gas users in case of an emergency.

Some in the natural gas industry say that we do not need a curtailment plan because supplies are plentiful. But if supplies are as plentiful as they now estimate—and their estimates are a lot higher since prices have risen—they have nothing to fear from a curtailment plan because it won't be used. But if supplies aren't as plentiful as they now believe or if we suffer a crisis similar to the one endured in the winter of 1976, the Congress has a responsibility to assure that schools, hospitals, and residential users have first priority to obtain gas supplies necessary to protect the health and safety of our citizens.

STATEMENT OF HON. JIM SASSER, A U.S. SENATOR FROM THE STATE OF TENNESSEE

Mr. Chairman, I want to thank you and the members of the committee for providing me with the opportunity to address the problem of natural gas prices and the administration's effort to raise the price of gas faster than provided for under the Natural Gas Policy Act of 1978.

I oppose this backdoor effort to administratively decontrol large volumes of our natural gas supplies while the Administration claims that it will wait for next year to offer legislation to decontrol gas prices altogether.

Since 1977, natural gas prices have risen 30 percent each year. Consumers in my own State of Tennessee have written me, called me and sent telegrams to me complaining that these high costs were hurting them in the home and in their businesses. I would like to offer for the record two such letters from a small businessman and boy's club.

I share the words of these consumers. "Enough is enough!"

With our economy at its current rate of output, with 8½ percent unemployment nationally, and 12.2 percent unemployment in Tennessee, we cannot afford the additional shocks of faster rising gas prices. The Council on Wage and Price stability stated that the pressures on the economy of natural gas decontrol would be very negative. The Council estimated that decontrol would add one percent to our current level of unemployment, and three percent to our current level of inflation. Again, "enough is enough!"

I believe that there are two areas in which the American people would be hurt most in their daily lives by the procedures which the Federal Energy Regulatory Commission is pursuing this month: in food prices and in the home.

If natural gas prices are decontrolled, farm cost could rise by an additional $8.2 billion by the end of 1984. Farmers will be badly hurt, and consumers as well, when nitrogen fertilizer prices triple by that time. Other prices will also soar to the detriment of the entire nation.

The other cost would be to our Nation's households. According to this month's Department of Energy report, 55 percent of our Nation's households heat their homes with gas. The precentage is even higher in Tennessee. Most of these people cannot afford the $1,000 to change their gas burners over to coal or oil if gas prices go through the roof.

But what is FERC proposing? It would increase gas costs nationally by $48 billion over the next 3 years. In my own state of Tennessee, the additional cost of heating a home thanks to the FERC ruling that may emerge next month could be as much as $900 for a home in Memphis, and $600 for a home in Nashville.

Yet Commissioner Butler says that he hopes to act in the absence of Congressional action to totally decontrol gas prices. The legislative decontrol that Congressman Gramm proposes in the House of Representatives would cost the nation over $50 billion, and my own State of Tennessee $3.2 billion in just 3 years, over half a billion of which could come from Tennessee households.

I find this impossible to support and I hope that the committee shares this view.

In 1978, Congress determined a schedule for easing the burden of the increases in natural gas prices under NGPA. Once again, I say that any change should be made by Congress.

It is ironic, and hypocritical, that an administration that constantly berates unelected officials for their habit of making law through bureaucratic fiat, would condone these actions by FERC. If it opposes the FERC procedures, then it should keep a bureaucrat from making national policy. If the administration supports FERC in this matter, then it should be honest with the American people and submit to Congress its proposal for gas price decontrol.

I believe that the administration is unwilling to take credit for the $18 billion in additional annual gas costs that this action would entail, but that it is taking shelter in the FERC ruling procedure to raise prices to the so-called market price.

Once again, "Enough is enough!"

And so I hope that my colleagues join me as a cosponsor of S. Res. 331, a sense of the Senate resolution opposing the administrative raising of natural gas prices in advance of the schedule legislated in 1978.

DENBO SCRAP MATERIALS, INC.,
Pulaski, Tenn., December 28, 1981.

Hon. JAMES SASSER,
U.S. Senate,
Washington, D.C.

DEAR SENATOR SASSER, I fully support your position in opposing the Deregulation of Natural Gas. I earnestly hope that you are successful in your efforts.

My company employs 35 people in Pulaski and we are a major recycling firm in the processing of ferrous and nonferrous scrap. Our recycling processes utilize natural gas as an energy source. Any radical increase in the price of natural gas would greatly add to the price spiral affecting our manufacturing costs and jeopardize the future of our people. It is most difficult for the small businessman without compounding his plight with higher energy costs.

On behalf of my employees and myself, your continued outspoken opposition will be appreciated.

Sincerely,

THEODORE D. LIPMAN, *President.*

BOYS CLUBS OF KNOXVILLE, INC.,
Knoxville, Tenn., December 28, 1981.

Senator JAMES SASSER,
Russell Senate Building,
Washington, D.C.

DEAR SENATOR SASSER: I want to applaud you on your efforts in trying to halt the push for the deregulation of natural gas. We are all aware of the increased cost in utility cost over the past few years and the suggested deregulation would again excel this expense. Ironically we are in the process of converting our boiler from burning fuel oil to natural gas, at a cost of $10,000. At the end of 1980 and through November 1981, we have spent over $56,000 for fuel oil and we were anticipating a reduction of at least 50 percent.

I appreciate your efforts and I support your stand. As a director of a non-profit organization, the deregulation would place another financial burden on our operations. I feel we have suffered enough through the recent federal cut backs.

Thanks again.

Sincerely,

JOHN LEE, *Executive Director.*

The CHAIRMAN. Senator Jackson.

STATEMENT OF HON. HENRY M. JACKSON, A U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator JACKSON. Thank you, Mr. Chairman. I would like to take a moment to describe the situation facing the committee today as I see it.

Congress passed the Natural Gas Policy Act of 1978 momentarily settling 25 years of debate on natural gas policy issues. We held our collective breath while the complicated statute was implemented by the Federal Energy Regulatory Commission and by the responsible State authorities. No one pretended that the act was perfect, but we hoped that it would work, and after a rocky start, it has been working reasonably well. The same parties that complained about the compromise in 1978 are still complaining. The producers want more deregulation, higher prices, higher profits. The consumer groups want less deregulation, lower prices, more competitiion. The economists want consumers to pay the true price of gas. The industry groups who asked us to provide them with certainty are coming back to Congress to complain about this or that provision and ask us to amend the very complicated statute.

Faced with the lack of consensus on what if anything should be done about the statute, the President has wisely decided that we should do nothing.

After taking a look at the industry's performance under NGPA and assessing the risk to the economy of accelerated deregulation, I agree. During 1981, a record number of gas well completions were reported—17,807. This was 13.6 percent above the level reported in 1980. Footage drilled during 1981 totaled 361 million feet, a 26.9-percent increase from the 1980 level. Obviously NGPA is providing drilling incentives. Reserves committed to the interstate market which was starved for natural gas during the 1970's are up substantially. Drilling for deep gas where we think there are huge reserves has increased at a rate of 17 percent annually since 1977. Drilling in known reserves is increasing, too.

The only area where I can see real problems under NGPA is on the homefront. Consumers faced with 30-percent increases in gas prices every year under the NGPA are having trouble paying their bills. The problem is especially bad because of the record cold weather. I can see where they are having trouble, and I certainly sympathize with them. The gas distribution companies are worried, very worried, about future price increases. They are afraid they won't be able to pass them on, and they will begin to lose customers, but what sort of sympathy are consumers getting from the agency charged with protecting them? None. None whatsoever; in fact, it is even worse than that.

According to what I read, the Chairman of FERC is going to propose raising the prices of all old gas. He is going to try to use two obscure provisions in the NGPA that were never intended for that purpose. Quite frankly, I don't like it, nor do many of my colleagues as you will see today.

Congress looked at the old gas issues; even the Pearson-Benson legislation which passed the Senate left old gas at old prices. The NGPA lets old gas prices increase with inflation. That is plenty of incentive to keep flowing gas in production. I cannot support administrative deregulation of old gas. I know of no justification for doing so, and I, for one, will fight the proposal and urge my colleagues to do so.

I would conclude by saying enough is enough. Thank you, Mr. Chairman.

STATEMENT OF HON. DON NICKLES, A U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator NICKLES. If I might make a couple of comments, Mr. Chairman, I would concur with your observation that there is no real consensus within the industry of exactly everything that should be done. I myself visited with probably a couple of hundred people in meetings in Oklahoma to discuss NGPA specifically, and there are some differentials between some of the deep gas drillers and some of the people who predominate in more shallow gas.

There is some difference in opinion between people that are primarily in the interstate market and those in the intrastate market. But I would offer a little bit different tone than that of Senator Jackson, and that would be the fact that I think we are going to have to have some changes made in NGPA or we are going to encounter some serious problems.

I think Senator Johnston made a good statement. I think his bill is certainly partially headed in the right direction. I also think that Congressman Phil Gramm's bill proposes some needed changes.

As the chairman is aware, I introduced legislation earlier this year to repeal the Fuel Use Act, and the changes that were made to it by us in Congress last year to repeal the act's provisions that mandate utility conversion from gas to coal by 1990 was a positive step.

We have seen some good moves in the energy field primarily based on deregulation. As Senator Jackson is probably aware of, most of the increase in drilling activity for gas has been in deep gas, and the reason why we have had that increased activity is because it has been deregulated. Thus the increase that we have seen in drilling activity and the increases in gas supply, primarily a direct result of the fact that it has been partially deregulated. Those areas and those sectors that have continued to be regulated I think have left them a little bit short in the marketplace.

Again, we find ourselves trying to make very critical decisions in this Congress concerning price, concerning the end use of that particular commodity, and I think that is a mistaken assumption to assume that we can do it better than the marketplace. If given a chance to operate, the marketplace could well prove to operate much more effectively. The decontrol of oil, as I think Senator Johnston pointed out earlier, has proven to be effective and has been a real positive thing, a stimulus for our economy, and it has worked. We are now burning less oil today than we were in the past, and we are importing considerably less.

Whether or not we could do total and complete decontrol over a couple of years on old and new gas I don't know. I would hope so. I would hope this committee would have the courage and I congratulate the chairman for holding these hearings to be able to look at this in depth.

The CHAIRMAN. Thank you. Senator Ford?

STATEMENT OF HON. WENDELL H. FORD, A U.S. SENATOR FROM THE STATE OF KENTUCKY

Senator FORD. I thank the chairman, and I want to say just a few words regarding the practical situation that faces us in examination of the Natural Gas Policy Act.

Utility prices have replaced taxes as the irritant in my opinion for the electric industry. This is especially true of gas prices. From my constituents I hear more of this issue than any other.

The problem is not one of doctrine and the public is not going to accept any solution put forth as an article of faith. The public has had it up to its ears with articles of faith. Mr. Chairman, the Natural Gas Policy Act was placed into law by a series of practical compromises reflecting the varied interests represented in the Congress. Granted not all of these decisions have worked well, but it is incumbent upon those who offer change to come up with better practical solutions.

I would offer just one example of my own practical situation. Kentucky is served by several interstate pipelines, but two are dominant. The pipeline A's gas is 70 percent old gas. Pipeline B's is 38 percent. A's acquisition costs are 57 cents an Mcf lower than B's. How do you make changes that will help B without devastating A? This is not going to be easy.

I for one as of now am not convinced that the changes put before us are better than the Natural Gas Pricing Act. Perhaps better provisions will come out of these hearings, and I certainly hope so. If not, I shall vote to leave the NGPA on the books as it now stands.

Mr. Chairman, I have heard so much about how well the deregulation of crude has worked and how much less oil we are importing into this country. Well, when you only are operating the industrial complex at, the last figure I think was 70 percent, you are using about 30 percent less fuel, and when we get the economy back on the right track and we move it back to 95 percent, how much then will we be importing into this country? That figure I asked Secretary Edwards for and he has not yet come forward with that as yet, so I think those who brag about the decontrol of crude had better face that situation and answer that question before we can make any kind of decision on deregulation of natural gas which I will oppose.

The CHAIRMAN. Thank you. Senator Metzenbaum?

STATEMENT OF HON. HOWARD M. METZENBAUM, A U.S. SENATOR FROM THE STATE OF OHIO

Senator METZENBAUM. Mr. Chairman, one of the items on our agenda today obviously has to do with the question of the wisdom or lack of wisdom of immediate decontrol of natural gas prices. I have noted that one member of the committee has seen fit to point out what great achievements have occurred as a result of the decontrol of the price of oil.

My own opposition to decontrol is well known, and I don't intend to restate my views on that issue today. I do, however, intend to take issue with the misleading and factually inaccurate statements that have been made in recent days with regard to the impact of crude oil decontrol. The country was told over the weekend the falling gasoline prices are the result of higher American production brought about by decontrol.

Mr. Chairman, that just isn't in accord with the facts. That isn't true. In January 1980, when the President by the stroke of a pen ended price controls on domestic crude oil, we were producing 8.6 million barrels of oil per day. In September 1981, the latest month for which figures are available, 20 months of decontrol has really had a tremendous impact. We are now producing the same 8.6 million barrels of oil a day, so decontrol of oil has not caused gasoline prices to fall. Prices have nothing whatsoever to do with decontrol. The facts are pretty evident. Demand for oil is down. Why? It is pretty simple. Come to my State. Come to Michigan. Come to Indiana. You will see the closed factories, the unemployment lines, the results of a worldwide recession that has literally slashed worldwide oil demand.

Look at Britain and Mexico and you will see very large new oil production, production that wasn't online when OPEC began in 1973 to gouge the world oil consumers, and production that has substantially increased since decontrol occurred in this country.

Finally, Mr. Chairman, if you want to understand the drop in our use of oil, go out on the streets and highways of this country and count the small cars. Look around here at the cars that are parked around the Capitol Building, the Datsuns, the Toyotas, and, at last, some of the American-made models are getting better mileage. I might say that the Senator from Washington will recollect full well when we attempted to push the American companies in that direction by insisting upon mandatory minimums for mileage and had such difficulty in the House. It passed the Senate. The popularity of these cars has had a lot to do with gasoline prices. But high prices started in 1973. Decontrol of oil in this country only made high prices even higher and rich companies even richer.

I'm sure, Mr. Chairman, you and I would agree that the questions involved in the price of oil and natural gas are of enormous importance to the Nation's economy, but I believe that the dissemination of misleading and distorted information does not serve the public interest.

Now with respect to the question of decontrol of the price of natural gas, it is a given, it is a foregone conclusion, that this President is not going to decontrol the price of natural gas, that is, not until the 1982 election is over. It is also a fact that now we even find that the retail gas companies don't want decontrol at the present time.

We had hearings in Ohio this past week before the Federal Energy Regulatory Commission. Columbia Gas was involved in that. Columbia Gas didn't attend the hearings, but they told State gas producers according to the news reports that Columbia opposes sudden decontrol of all gas prices, fearing the consumer reaction, then went on to say, "Many of our customers are saying they are approaching a choice of eating or freezing."

I must say, Mr. Chairman, that I didn't think that the gas companies were going to pick up the complaints that so many of the consumer groups used about the problem of the choice being between eating and freezing. I find it even more significant and rather unusual to say the least to hear Columbia Gas Co. saying publicly that Government assistance of some form is the only solution to making sure the really destitute don't go cold.

Isn't this interesting that the integrated gas systems that have been so involved in driving up the price of the product are now saying that the only solution for the destitute in the cold is for Government to step in and provide some means of keeping them warm?

The real facts are that prices should be coming down in this market. Columbia has capped 9,000 gas wells in Ohio. I thought the free market was supposed to work, but the free market doesn't work if you have monopolistic operations. There are only two pipelines operating in Ohio. They have closed the wells so there will not be too much supply.

Frankly, Mr. Chairman, I don't believe, as do many other Members of this Congress, that deregulation is good in any form. Administrative deregulation is no better for the American public than deregulation by the President of the United States. Deregulation through FERC and through the back door isn't good sense, and isn't in accordance with the law. It violates the trust imposed upon the Chairman of the FERC.

I have already filed an action in the Columbia Gas case that is pending before FERC. I and some others asked the Chairman to recuse himself from the case because he has obviously prejudged the case even before it got to him. He said that I and others who asked FERC to block the pass through of high-priced gas when other cheaper supplies were available were simply asking FERC to engage in a witch hunt.

Mr. Chairman, I don't believe that the country wants deregulation of the price of natural gas. I don't think they want it through the back door or the front door. I think it would cause economic chaos. Those are the words used by the Oklahoma legislature in their resolution. Frankly, Mr. Chairman, I think there is another responsibility that this committee has, and this Congress has. One of the concerns that everybody has at the moment is what happens in 1985. What will be the impact when the NGPA comes to a conclusion and new gas prices are decontrolled?

Mr. Chairman, I would strongly recommend to you that this committee start considering whether or not there is a responsibility on the part of Congress to extend the NGPA beyond 1985 so as not to cause that economic chaos. I know that this flies in the face of those who would like to have immediate deregulation, but frankly, Mr. Chairman, I think that is what our responsible position should be.

I thank you, sir.

The CHAIRMAN. Thank you. If there are no other statements to be made, we will turn to our witnesses. The first witness this morning is my distinguished colleague who has a statement which he wishes to bring to us this morning. Senator Chafee?

Senator CHAFEE. Thank you very much, Mr. Chairman and members of the committee. I want to thank each of you for this opportunity to appear before you.

Before I start, I have a statement which Senator Kassebaum asked that I submit for the record, and I would ask that that statement be included in the record.

The CHAIRMAN. It is so ordered.

[The prepared statement of Senator Kassebaum follows:]

STATEMENT OF HON. NANCY LANDON KASSEBAUM, A U.S. SENATOR FROM THE STATE OF KANSAS

Mr. Chairman, I appreciate the opportunity to submit these comments for the record on S. Res. 331, introduced by Senator Chafee.

I was not a member of the Senate when Congress enacted the Natural Gas Policy Act of 1978, but I am familiar with the intense struggle that led to its passage. There is little dissent from the proposition that market prices for gas will help us conserve this resource and thereby reduce our reliance on foreign energy supplies. Congress recognized these needs when it passed the 1978 act and there is substantial evidence that these goals are being met. Since then, we have witnessed increased exploration and development of new gas supplies, enhanced conservation efforts, and no recurrences of the natural gas shortages of the past.

However, this transition from a U.S. economy based on cheap, plentiful energy to one of limited and expensive resources has been very traumatic for many segments of society. During this unusually harsh winter, we have heard the outcry from not only the elderly and low-income, but from the middle class as well. These people are frustrated and angry as prices continue to rise. I speak not only in their behalf, but for the many farmers in Kansas and across the Nation who depend on natural gas to pump the irrigated water that is so vital to crop production. It is important to keep in mind that with the farm economy in such a fragile state, further loosening now of gas prices could result in the cessation of irrigation, lower crop yields and higher food prices, just when we are beginning to sustain some real progress in fighting inflation.

I was very pleased that the President recognized these problems and decided not to recommend legislation to accelerate the phased price decontrol embodied in the 1978 act. For the same reasons, I think it is important that Congress send a clear signal to the Federal Energy Regulatory Commission that we do not view favorably any effort on their part to accelerate the decontrol process by administrative actions. I applaud the Senator from Rhode Island for his initiative and urge my colleagues to support this resolution.

STATEMENT OF HON. JOHN H. CHAFEE, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator **Chafee**. Mr. Chairman, members of the committee, I asked to appear as a witness today for three reasons. The first is to announce that a bipartisan group of 29 Members of the Senate has agreed to cosponsor a resolution I introduced on March third opposing the use of FERC's rulemaking authority to achieve accelerated and total decontrol of natural gas prices, and I am delighted that my colleagues here at the bench, Senator Exon, Senator Jackson, and Senator Metzenbaum, are among those who are cosponsoring this resolution.

I introduced the resolution because of my concern about the possibility that the Federal Energy Regulatory Commission may attempt to accelerate the decontrol of new natural gas prices, of new gas prices, in advance of the timetable set out in the Natural Gas Policy Act.

I am also concerned, Mr. Chairman, and members of the committee, that the Commission may attempt to increase old gas prices as well. The same resolution was introduced first in the House by Congressman Dingell, chairman of the Energy and Commerce Committee, and that resolution now has 125 cosponsors.

Mr. Chairman, I oppose accelerated decontrol of natural gas prices, and I was pleased, as were many others, when the President announced he would not push decontrol legislation. I am equally opposed to accelerated decontrol through the administrative rulemaking process.

The second purpose for my appearance is to bring this issue to the attention of the members of this committee and of Congress and the American public as well. We in Congress it seems to me should be particularly concerned because Congress decided the natural gas policy decontrol issue when it enacted the Natural Gas Policy Act of 1977, and any change in that price control policy should be made by Congress and not by an administrative agency.

Also, I believe the public should be concerned because the negative economic effects of accelerated decontrol are just as great whether price increases are accomplished through legislation or through administrative rulemaking. We cannot afford additional pressures that total decontrol would being on our economy.

The Council on Wage and Price Stability has estimated that total decontrol of natural gas prices would add up to 2 to 3 percentage points to the rate of inflation. This Council also estimated that total decontrol could mean a ½ to 1-percent increase in unemployment. Needless to say, senior citizens and low- and fixed-income individuals would also be affected. In my own State of Rhode Island, Mr. Chairman, the cost of total decontrol would be severe. Overall, Rhode Island's gas consumers would pay an additional $132 million in fuel bills over the next 3 years. This would mean for the 96,000 residential gas users in the State that their fuel bills would increase by over $1,000 in the next 3-year period; in other words, over $330 per year per household.

Industry and commercial gas users in the State would pay an additional $64 million in fuel bills over the next 3 years.

Now the third purpose of my appearance is to explain how accelerated total decontrol could be accomplished through the administrative rulemaking process. As the members of the committee know, there are three broad categories of gas under the Natural Gas Policy Act of 1977. The first is new gas discovered after 1977. The second is old gas discovered before 1977, and the third is so-called high-risk gas.

The act provides for incremental wellhead price increases for new gas through 1985 when new gas prices will no longer be subject to control. The act maintains permanent controls on old gas prices and decontrols prices of certain categories of high-risk gas on the theory that higher prices are necessary to meet exploration and extraction costs.

The Chairman of the Federal Energy Regulatory Commission, Mr. Charles M. Butler III, who will be appearing today I understand before this committee, has indicated in public statements that he is a strong advocate for total decontrol of natural gas pricing. He has also stated publicly that he believes total decontrol can be accomplished administratively.

There are three means by which total decontrol can be accomplished. The first is, of course, the incremental price increases and eventual decontrol of new gas prices under the Natural Gas Policy Act. This is clearly within FERC's statutory authority, and I have no objection to it. In other words, that is the law.

The second method would be to create new categories of high-risk gas to speed up the decontrol of new gas prices. For example, the Commission has proposed a rule which would make new gas at depths between 10,000 and 15,000 feet high-risk gas, and therefore prices for this category of gas would be decontrolled. I oppose this rulemaking because I am not convinced of the need to provide price incentives for this type of new gas and whether that need outweighs the negative impact of cost increases to consumers. If the rule is adopted, it could result in an increase anywhere from $6 to $18 billion in gas prices to consumers.

Again, the procedure itself is within its statutory authority. However, I oppose the use of this procedure for the purposes of circumventing the spirit of the Natural Gas Policy Act to achieve total decontrol.

The third method to achieve total decontrol through administrative means would be to raise the price of old gas by raising the price of all old gas to the current highest price charged for old gas, and then to raise the ceiling price for old gas to the ceiling price for new gas.

I believe this method is likely to be beyond the Commission's statutory authority. We will, therefore, need to keep a close watch on any proposed rulemaking on old gas.

To summarize, Mr. Chairman, I do not oppose actions that are authorized under the Natural Gas Policy Act such as the scheduled decontrol of new gas by January 1, 1985, the incremental adjustments to allow for inflation and classification of new gas as high-risk gas where it is necessary to provide cost incentives for exploration, and indeed I voted for the Natural Gas Policy Act in 1977.

However, I am opposed to the reclassification of new gas as high-risk gas for the purpose of accelerating decontrol of new gas prices.

I am also opposed to decontrol of old gas prices, so I thank very much the committee for this opportunity to express my views on this legislation which you are now considering, and the whole problem that is raised by acting administratively through the Chairman of FERC, doing all of this administratively. Thank you.

The CHAIRMAN. Thank you, Senator.

Senator Exon?

STATEMENT OF HON. J. JAMES EXON, A U.S. SENATOR FROM THE STATE OF NEBRASKA

Senator EXON. Thank you, Mr. Chairman. Before I begin my testimony on the matter at hand, I would just like to endorse the statements that you and others on the committee made this morning with regard to what I consider very unfortunate and unwise action on the part of the President in vetoing the measure that he did on Saturday last. It seems to me, Mr. Chairman, that we should move as quickly as we can to override that veto because it seems to me that during this period in which when we all know we are living in very perilous and uncertain times, emphasized by the fact that through deficit financing we are building up our military expenditures, during that time, and if it is proven that we need that buildup, and I think we do, then I think it is foolhardy for us to ignore what could happen to America in case of some unforeseen emergency.

This is strictly a standby bill, and I see no reason why the President vetoed it. If for no other reason we need that, Mr. Chairman, to help out the States in the allocation of that precious fuel should there be an embargo or some other type of a cutoff in the months or years ahead. The State set-aside that we had in effect when I was Governor in Nebraska in the midseventies was the critical thing in making the allocations of supplies to keep our farms running, to keep our critical industries going, and I just hope that everyone understands that this bill doesn't do anything until the President makes the proper determination. Therefore, I hope the President will change his mind or the Congress will change his mind for him.

Mr. Chairman, members of the Energy Committee, I am pleased to come before you today to participate in this hearing in an effort to focus some attention on the issues facing the Congress on the matter of natural gas decontrol.

I support and am a cosponsor of Senator Chafee's sense of the Senate resolution. I think it is an important step in the right direction. Last year I offered a sense of the Senate resolution that was directed toward the same end. Although that failed in the U.S. Senate, it was directed at suggesting that the President not even send up accelerated gas decontrol legislation which wisely I think he has finally decided not to do.

Last week, eight members of the Senate sent a message to the Federal Energy Regulatory Commission. Among those at the table there I see are Senator Metzenbaum and Senator Bumpers, with particular regard to near-deep gas proposals and considerations of the Commission, and I would like to offer that as a part of the record.

I was encouraged at President Reagan's announcement earlier this month not to pursue legislation to accelerate the decontrol schedule of natural gas prices. The President's retreat from that proposal I believe was the result of hard labors of many members of this committee who had expressed their deep concern over acceleration of the decontrol of natural gas in these difficult economic times.

It is unfortunate, however, that the President has only shifted the forum of this issue from the Congress to the Federal Energy Regulatory Commission. The Chairman of that Commission, Mr. Charles M. Butler, III, appointed by President Reagan to that post, has publicly announced his intention to proceed, pursue acceleraled decontrol of several different categories of gas, included so-called old gas, through administrative rulemaking. Chairman Butler has indicated that in light of congressional inaction and apparent opposition to decontrol legislation beyond the 1978 Natural Gas Policy Act, he will pursue an end-run around the legislative branch of the Federal Government on this matter.

President Reagan has not objected publicly at least to this strategy by his Chairman. I must express to the committee that this concerns me a great deal, and therefore, I intend to offer when and if the Chafee amendment comes to the floor of the Senate an amendment to involve the President of the United States along with his appointees in attempting to express our opposition to any accelerated decontrol of natural gas.

I would hope that this committee, several of the members of which were instrumental draftsmen of the Natural Gas Policy Act of 1978, will consider two major concerns of this Senator from the State of Nebraska in reviewing the 1978 law over the next few days, weeks, and months.

First of all, the committee must consider the impact of accelerating the decontrol schedule on our economy in general, and upon agriculture in particular.

Second, I believe that a major question of policy must be considered by the committee. What we have here is an executive agency composed of, in the President's own words, "unelected bureaucrats," taking a national policy initiative that properly belongs to the U.S. Congress.

As a farm belt Senator, I am deeply concerned about the impact of accelerated decontrol on agriculture. The farming sector of our Nation will be hit with a double-barreled blow if natural gas prices are permitted to jump even faster than under the current law. As you know, this past week we recognized Natural Agriculture Day. However, there was nothing to celebrate about. American agriculture has already been thrust into a severe economic slump. Farmers, the backbone of our Nation's economy, are staring in the face of some of the lowest ever farm prices, rising production costs, and high interest rates. Net farm income adjusted for inflation is nearing the 1938 levels. Feed grain exports are predicted to be down by 6 percent, and corn prices now about $2.63 a bushel are down 23 percent from last year. Higher natural gas prices will force up the cost of production for the agricultural sector as costs of fertilizer and other operating expenses increases to reflect the accelerated decontrol.

Some studies have shown that overall production costs for the farm economy will increase over and above current levels by 8.2 billion in the next 3 years. Farmers alone could shoulder as much as 417 million of these increased costs. Such increases will be reflected, for example, in the price of nitrogen fertilizer. Costs could soar from a current $250 a ton to upwards to an estimated high of $620 a ton, adding as much as 26 cents to the cost of production of a bushel of corn.

In addition, irrigation, which utilizes natural gas, could jump 50 percent beyond current increases under an accelerated decontrol scheme. Of course, it is highly likely, and we know from the past, that the farmers will be unable to pass along all of these increased costs of their product. Nevertheless, food prices will be affected. Also goods and services dependent upon natural gas would cost more, and only add to inflation and upward pressure on interest rates.

I certainly believe that the scope of this committee's examination of the impact of accelerated decontrol must go even beyond the obvious higher costs which will be paid by millions of American homeowners whose gas bill could double under an accelerated control plan. Residential customers will also be paying more for both heating and eating. Residential customers will in addition also be picking up price hikes passed on by industrial and commercial users in the cost of the goods and services.

Mr. Chairman, I would ask that the balance of the statement be submitted for the record.

The CHAIRMAN. It will be placed in the record in full.

Senator EXON. Those are the highlights that I have addressed. I hope that the committee will look very long and very hard at the proposal and as has been said very well here previously, while the Deregulation Act is not a perfect act, at least with regard to natural gas I hope that we will leave well enough alone.

I thank the Chairman.

[The prepared statement and attachment submitted by Senator Exon follow:]

STATEMENT BY
U.S. SENATOR J. JAMES EXON (D-Neb)
BEFORE THE
SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES

IN RE:
HEARINGS ON THE
NATURAL GAS POLICY ACT
OF 1978

March 22, 1982

MR. CHAIRMAN, and Members of the Energy Committee, I am pleased to come before you today to participate in this hearing in an effort to focus some attention on issues facing the Congress on the matter of natural gas decontrol.

I was encouraged at President Reagan's announcement earlier this month not to pursue legislation to accelerate the decontrol schedule of natural gas prices. The President's retreat from that proposal, I believe, was the result of the hard labors of many of the Members of this Committee who had expressed their deep concerns over accelerating the decontrol of natural gas in these difficult economic times.

It is unfortunate, however, that the President has only shifted the forum of this issue from the Congress, to the Federal Energy Regulatory Commission. The Chairman of that Commission, Mr. Charles M. Butler III, appointed by President Reagan to that post, has publically announced his intention to pursue accelerated decontrol of several different categories of gas, included so-called "old gas", through administrative rulemaking. Chairman Butler has indicated that, in light of Congressional inaction and apparent opposition to decontrol legislation beyond the 1978 Natural Gas Policy Act, he will pursue an end-run around the legislative branch of the Federal government on this matter.

President Reagan has not objected, publically at least, to this strategy by his Chairman. I must express to the Committee that this concerns me.

I would hope that this Committee, several of the Members of which were instrumental draftsmen of the Natural Gas Policy Act of 1978, will consider two major concerns of this Senator from the State of Nebraska, in reviewing the 1978 law over the next few days, weeks, and months.

First of all, the Committee must consider the impact of accelerating the decontrol schedule on our economy in general, and upon agriculture in particular.

Second, I believe that a major question of policy must be considered by the Committee. What we have here is an executive agency, composed of---in the President's own words---"unelected bureaucrats", taking a national policy initiative that properly belongs to the United States Congress.

As a farm belt Senator, I am deeply concerned about the impact of accelerated decontrol on agriculture. The farming sector of our nation would be hit with a double-barreled blow if natural gas prices are permitted to jump even faster than under the current law.

As you all know, this past week, we recognized "National Agriculture Day", however, there was nothing to celebrate.

American agriculture has already been thrust into a severe economic slump. Farmers, the backbone of our nation's economy, are staring into the face of some of the lowest ever farm prices, rising production costs and high interest rates. Net farm income adjusted for inflation, is nearing 1938 levels. Feed-grain exports are predicted to be down by 6%, and corn prices, now about $2.63 per bushel, are down 23% from last year.

Higher natural gas prices will force up the costs of production for the agriculture sector as the costs of fertilizer and other operating expenses increase to reflect accelerated decontrol. Some studies have shown that overall production costs for the farm economy would increase over and above current levels by $8.2 billion in the next three years. Nebraska farmers alone could shoulder as much as $417 million of those increased costs. Such increases will be reflected, for example, in the price of nitrogen fertilizer. Costs could soar from the current $250 a ton, to upwards of $620 a ton, adding as much as 26 cents to the cost of producing a bushel of corn. In addition, irrigation which utilizes natural gas, would jump 50% beyond current increases under an accelerated decontrol scheme.

Of course, it is highly likely that the farmer will be unable to pass such costs along in the price of his product. Food prices would be indirectly affected nonetheless. Also, goods and services dependent upon natural gas would cost more, and only add to inflation and upward pressure on interest rates.

I certainly believe that the scope of this Committee's examination of the impact of accelerated decontrol, must go beyond the higher costs which will be paid by millions of American homeowners whose gas bills could double under an accelerated decontrol plan. Residential customers will also be paying more for both heating and eating. Residential customers will also be picking up price hikes passed on by industrial and commercial users in the costs of goods and services.

Speaking briefly for my own State of Nebraska, I would point out as an example of a typical grain-belt economy, that the impact of accelerating the decontrol schedule would be devastating. Nearly 70% of the residential homes in my state are heated with natural gas. This accounts for nearly 40% of the total gas use in Nebraska. Commercial and industrial use of natural gas accounts for about 50% of total gas use, and agriculture about 8% of total gas use. Over 30% of the irrigation units in the state utilize natural gas or propane to power their engines. In addition, many small municipal power plants use natural gas at peak load generation.

On the question of policy, I believe that it is incumbent upon this Committee to examine the actions proposed by the Chairman of the Federal Energy Regulatory Commission to determine whether such action is appropriate within the intent of the language of the NGPA. Chairman Butler has admitted that some of his proposals which he seeks to implement "would be testing the frontiers of the Commission's authority." I would suggest to the Members of the Committee that, at stake in such an experiment is nothing less than the basic health of the American economy and the fundamental authority of the Congress.

A basic inquiry which the Committee must ask is, what is to be gained by accelerating the decontrol of natural gas prices?

Already, the average wellhead price for natural gas has been rising, according to some Wall Street analysts, at an approximate rate of 30% for the last two years. Producers have been aggressive in seeking the maximum ceiling price, prices of deep gas and tight formations have been rising rapidly, and old gas is being depleted and replaced with high-priced new gas. New gas currently receives a price rise each year at the rate of inflation, plus a real growth factor of 4% under the NGPA. Producers, however, are hollering for more, and not tommorrow, but now.

Drilling activity has soared since the passage of the NGPA. For 1981, the American Gas Association has reported that rig-counts are at an all time high. Well completions for gas have been reported up 7.3% over last year. Our drilling capacity however, has been reported to be at maximum capacity. Our production potential is reported to be steadily declining, and despite the increase in drilling activity, reserve additions are expected to remain constant due to the realities of our resource base.

I believe the Committee must ask the industry, how much will accelerated decontrol add to our overall gas supplies that the current NGPA will not or has not?

On another matter, much concern has been raised about the so-called price spike which may occur in 1985 under current law. I believe that the Committee must examine this issue to determine whether or not this is a valid concern. A recent, January 1982 study by Merrill Lynch has concluded that this price spike will not occur. Although much will depend upon the uncertainties of the oil market, if Merrill Lynch is correct, a major reason for accelerated decontrol has become a red-herring.

Furthermore, I believe that this Committee must ask the industry itself what it is doing to prepare for the advent of decontrol under the NGPA in 1985. Is the industry, particularly the pipeline companies, waiting for the government to tell them what to do next, or is the industry taking the initiative to negotiate and to resolve among themselves the multitude of contractual difficulties and supply problems?

In closing, let me say to the Members of the Committee that I believe a very detailed record must be made before we tamper with the delicate balance of interests embodied in the Natural Gas Policy Act of 1978. Are we seeking to increase our nation's supply of natural gas by accelerating price decontrol? Or are we merely adding to the coffers of the major oil companies who produce nearly all of our gas supplies? Are we seeking the appropriate balance for a national policy? Or are we shuning our responsibilities to the American public?

I thank you for the opportunity to address the Committee regarding my concerns about this matter.

UNITED STATES OF AMERICA

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

In The Matter Of:

High-Cost Natural Gas Produced
From Intermediate Deep Drilling: Docket No. RM 82-8

COMMENTS OF SENATOR HOWARD M. METZENBAUM ET AL., IN OPPOSITION TO PROPOSED RULEMAKING

Pursuant to the "Notice of Proposed Rulemaking" issued by the Commission on December 30, 1981, in the above captioned proceeding, Senators Howard M. Metzenbaum, William Proxmire, Dale Bumpers, Donald W. Riegle, Carl Levin, J. James Exon, Edward M. Kennedy, and Thomas Eagleton, hereby file their comments in opposition to the proposal of the Commission to amend its regulations to establish a so-called "special incentive price" for various categories of gas produced from depths between 10,000 and 15,000 feet. The grounds for opposing this proposed rulemaking are as follows:

I

THE COMMISSION'S PROPOSED RULEMAKING CONSTITUTES A FURTHER EFFORT TOWARD ADMINISTRATIVE DECONTROL AND SHOULD BE DISMISSED IMMEDIATELY

The maximum lawful price ceilings established by Congress under Title I of the National Gas Policy Act of 1978 (NGPA) have provided more than ample incentive for producers to explore for, drill and produce new supplies of natural gas. In fact, most producers in the Southwest and Appalachian regions were curtailed at various times during 1981 because of excess gas production that the pipelines could not transmit or market.[1] Petitions to the Commission for approval of off-systems sales to industrial users to "dump" additional gas supplies have increased dramatically during the past year. In sum, there is no need for further financial incentives to stimulate domestic gas production.[2]

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[1] See, e.g., "Gulf of Mexico's Gas Output Down Sharply," The Oil Daily, p.1, October 13, 1981. The article states that curtailments in the Gulf of Mexico alone had reached more than one billion cubic feet a day below seasonal market levels. An officer of a West-Coast-based major oil company was quoted as saying: "It's true demand is down, but I couldn't get ashore right now if I wanted to because the pipelines say they are clogged..." Similarly, Columbia Gas Transmission Corporation told its Appalachian Area producers in a letter dated May 8, 1981 that Columbia would shout in all of its pipeline production for sixty days. Columbia officials stated the shut-ins were necessary because of "temporary imbalance between supply and demand."

Furthermore, it is important to note that the NGPA does not impose any requirement that the Commission authorize any price on first sales by producers at levels above the maximum lawful price ceilings already authorized by Congress in Title I of the NGPA. Section 107(b) and Section 107(c)(5) of the NGPA merely states that the Commission "may" set a higher price for certain "high cost" gas under certain limited circumstances.

Absent a Congressional requirement to raise prices, and absent a practical need to provide a production incentive, it is clear that the Commission's only reason for issuing this proposed rulemaking to exceed the maximum lawful price ceiling is to move further toward deregulation of natural gas prices administratively through the "back door", rather than through normal legislative channels in Congress.

During the Energy Committee's hearings on the nomination of C.M. Butler III to be Chairman of the Federal Energy Regulatory Commission, Senator Metzenbaum asked Chairman Butler whether he perceived FERC's role as implementing the NGPA as passed by Congress or whether FERC should use the Act to carry out decontrol administratively even though Congress did not intend to lift prices on "old" gas produced before April, 1977. Chairman Butler responded: "I will not go to that Commission and try to deregulate natural gas prices across the board or anything else because I think that is the prerogative of Congress."[3] (emphasis supplied)

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[2] In addition to the domestic surplus of natural gas, incentive prices for "new" gas production under the N.G.P.A. have led to sharply increased exploration and development activities. In December, 1981, the Hughes Drilling Rig Count hit an all-time high of more than 4600 active exploratory oil and gas rigs in the field.

[3] Nomination of C.M. Butler III to be Chairman, Federal Energy Regulatory Commission, Hearing before the Committee on Energy and Natural Resources, United States Senate, Ninety-Seventh Congress, First Session, May 21, 1981, pp. 35-36.

Chairman Butler continued to defer to the Congress until September, 1981, when a planned Presidential announcement that decontrol legislation would be submitted to Congress failed to materialize.[4] Chairman Butler's deferential stance vanished shortly thereafter. Testifying at an Energy Committee oversight hearing on the implementation of Title I of the N.G.P.A., Chairman Butler announced his new agenda:

> A number of major Title I issues remain unresolved, however, first there is the Commission's responsibility to compare the NGPA's rate levels for interstate gas with the just and reasonable rates of the Natural Gas Act.
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> Second, there are a number of pending rulemakings which must be concluded as expeditiously as sound and reasoned deliberation will permit. For example, the Commission must resolve the difficult question of what producer related costs should be authorized under Section 110 of the NGPA...
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> Other unresolved issues either before the Commission or in the courts concern such matters as the pricing of gas production by interstate pipelines or their affiliates, the measurement of the BTU content of gas sales for pricing purposes, and the designation of additional categories of high-cost gas under Section 107(c)(5). One pending 107(c)(5) rulemaking would set incentive prices for drilling in deep water, 300 feet or deeper. I might add, that rule is on the docket for the next Commission meeting.
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> Other candidates for possible future Section 107(c)(5) designation include near deep, 10,000 to 15,000 feet drilling. A related question includes the appropriate applicability of a proposed rule allowing an incentive price when specified production enhancement is undertaken.[5] (emphasis supplied)

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[4] "Gas Decontrol Push Seems Over," The New York Times, September, 24, 1981, page 1-A.

[5] Hearings before the Committee on Energy and Natural Resources, United States Senate, Ninety-Seventh Congress, First Session, November 5, 1982, p. 7.

In these four paragraphs, Chairman Butler laid bare his plans for raising natural gas prices to levels roughly equal to those attainable by producers under decontrol legislation. Obviously, granting producers "incentive prices" under Section 107(c)(5) for "near deep" gas production is but one facet of this attempt to achieve decontrol through the "back door" at FERC. The proposal to grant producers 200 percent of the Section 103 price for all gas produced in 300 feet of water was quickly finalized at the November 12, 1981, Commission meeting after a year without any action. The Commission finalized the BTU-content rulemaking in Order 93-A, issued January 6, 1982. That rulemaking permitted producers to retroactively increase the price of all gas sold to pipeline/sellers based on BTU-content. The retroactive billing applies to all gas sold after December 1, 1978. It is clear that granting incentive prices for "near deep" gas produced between 10,000 and 15,000 feet is the next step in the Commission's calculated scheme to raise gas prices as high and quickly as possible administratively.

It is time for the Commission to stop this callous attempt to transfer wealth from consumers and consuming states to major oil companies and independent producers beyond what is reasonable and necessary to explore and produce new gas supplies. The "near deep" gas rule, if adopted as proposed, would have a serious impact on consumers and the economy in consuming states. A study conducted by the Energy Action Project of the Citizens/Labor Energy Coalition concluded that if the Commission raises the price for "near deep" gas to 150 percent of the Section 103 price, the average residential gas consumer would have to pay $94 to $147 in higher direct and indirect gas costs over the next two years.[6] Nationally, all residential consumers would see their bills rise $1.4 to $2.2 billion. Industrial users would experience a nationwide price increase of $.7 to $1.1 billion. The steel industry would see $158 to $245 million in higher gas bills. The chemical industry would have to absorb $171 to $267 million; In New England, from $86 to $134 million. In Illinois.

These higher gas bills can only result in more inflation, more lay-offs at factories that use natural gas, and increased strain on the economies of gas consuming states. The "near deep" gas rule has serious policy implications that go far beyond the parameters of the Commission's administration of the N.G.P.A. Those policy decisions are properly the domain of the Congress, and the Commission should dismiss the proposed rulemaking immediately.

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[6] An Estimate of the Consumer Cost of the Administration's Proposal to Increase the Price for So-Called Intermediate Deep Natural Gas, a report of the Energy Action Project of the Citizen/Labor Energy Coalition, January 18, 1982.

II

ASSUMING, ARGUENDO, THAT THE COMMISSION DECIDES TO PROCEED WITH GRANTING A SECTION 107(c)(5) INCENTIVE PRICE IN THIS PROCEEDING, THE COMMISSION DOES NOT HAVE AND HAS NOT REQUIRED THE FILING OF SUFFICIENT COST, RISK AND SUPPLY INFORMATION.

In Order No. 99, the Commission pointed out the serious problem that looms over any proceeding to grant Section 107 "incentive" prices to gas formations already eligible for "new" gas prices under Sections 102 and 103. The problem, of course, is that producers might have been willing to explore and produce the gas under Section 102 and 103 anyway. The result of the Section 107 determination then would be a substantial net increase in gas prices paid but no net increase in gas supplies produced. Accordingly, the Commission expressed concern about the creation of "perverse incentives.":

"In establishing prices for high-cost gas, the Commission must be sensitive not to undermine Congress's overall pricing scheme. Section 107(c)(5) prices must not create perverse incentives but must be in harmony with the overall Congressional scheme."[7] Ironically, before issuing Order No. 99, the Commission did not prepare a study or obtain information in evidentiary hearings to determine whether allowing producers to charge 200 percent of the Section 103 price for gas produced from tight sands formation was "reasonable," or "perverse." Instead, the Commission arbitrarily set the incentive price for tight sands at 200 percent of Section 103.

Furthermore, in the eighteen months since Order No. 99 was issued, the Commission has designated approximately 70 geological formations as tight sands. In none of these proceedings has the Commission produced an analysis to show that allowing producers to receive 200 percent of the Section 103 price does not result in "perverse incentive," even though in many of these geological areas (e.g., the Clinton sands formation in Ohio) gas production has been in existence for several decades.

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[7] Order No. 99, High-Cost Natural Gas Produced From Tight Formuations, Docket No. RM 79-16 (August 15, 1980), at p. 18.

Once again, the Commission is jumping the gun, scurrying to raise gas prices as high as possible administratively without any information or analysis to show that producers need 150 percent of the Section 103 price as a "reasonable" incentive to develop gas from wells drilled between 10,000 and 15,000 feet. There is nothing in the Commission's possession to show that raising "near deep" gas to the level proposed in rulemaking would not result in "perverse incentives." Furthermore, the Commission has not sought the essential information about production costs, drilling risks and gas supplies at there depths.

The Commission admits that it "does not feel entirely confident with presently available factual basis on the costs, risks, and supply potential of intermediate deep drilling."[8] Furthermore, the Commission concedes that "the amount of recoverable reserves located between 10,000 and 15,000 geet cannot be estimated accurately."[9] However, despite these deficiencies, the Commission declared, without any supporting evidence that:

> ...the Commission believes that the lack of interest in exploring and developing at those depths does not reflect the level of the reserves at those depths but reflects the fact that the cost of developing the gas reserves are (sic) so high that the applicable maximum lawful price do not provide adequate incentives.[10]

The Commission's explanation for the "lack of interest" in producing gas at these depths is its ~~totally~~ unsupported belief that the cost of developing gas reserves between 10,000 and 15,000 feet is very high: "The Commission's preliminary conclusion is that gas production from 10,000 to 15,000 feet presents extraordinary risks and costs which at presently applicable maximum lawful prices greatly inhibit production."[11]

The Commission must, of course, find that "extraordinary risks or costs" are present before it can grant Section 107(c)(5) incentive prices. However, unsupported assertions do not begin to satisfy the substantial evidence requirement for such a finding by the Commission. Furthermore, the Commission is making little effort to obtain this information from the industry. In the Notice of Proposed Rulemaking, the Commission did not order producers to submit the data necessary to determine unit production costs. Instead, the Commission merely "requested" that the producers provide the information.

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[8] Notice of Proposed Rulemaking for High-Cost Natural Gas Produced from Intermediate Deep Drilling, RM 82-8, mimeo, at p. 9

[9] Id, at 6.

[10] Id, at 6.

[11] Id, at 6.

In light of the substantial price increases that major oil companies, independent producers and production subsidiaries of interstate pipelines will receive if the Commission adopts the proposed rulemaking for "near deep" gas, the Commission should order these parties to submit the cost data. This submission should be under oath and subject to examination by the Commission's staff and other interested parties. Absent this requirement the potential for "perverse incentives" will far outstrip any potential benefit this proposed rule may contain for the public. This requirement is the least the Commission should impose in the interest of equity and to insure that the requirements of Section 107 of the NGPA are fulfilled.

William Proxmire, U.S.S.

Howard M Metzenbaum
Howard M. Metzenbaum, U.S.S.

Dale Bumpers
Dale Bumpers, U.S.S.

J J Exon
J. James Exon, U.S.S.

Don Riegle
Donald W. Riegle, U.S.S.

Edward M. Kennedy, U.S.S.

Carl Levin
Carl Levin, U.S.S.

Tom Eagleton
Thomas Eagleton, U.S.S.

The **Chairman**. Are there any questions?

Senator **Johnston**. Very briefly, Mr. Chairman, Senator Chafee, you state in your statement that you are not convinced of the need to provide higher price incentives for that category of gas between 10,000 and 15,000 feet for which FERC has proposed a special rule.

Now you are not convinced, but suppose there were evidence that between 10,000 and 15,000 feet the number of wells drilled is down while there is evidence that at other depths, for example, below 15,000 feet the number of wells were up? Would not that be the kind of evidence that would persuade you or convince you that we do need some additional incentive between 10,000 and 15,000 feet?

Senator **Chafee**. Well, I would have to know more about it than just that there has been a decline in that group, in the drilling of those depths.

Senator **Johnston**. Let me give you the figures here. Below 15,000 feet, 1981, over 1980, they were up 20 percent, and below 15,000 feet they were down 12 percent. That is in exploratory gas wells. There is the same kind of decline in number of feet drilled. There is also the same kind of differential in discoveries, and the evidence is that the amount of gas between 10,000 and 15,000 feet, a tremendous amount relatively speaking, is not being touched, and that the cost of drilling for the near-deep gas is too high from the economic standpoint, given the prices of the Natural Gas Policy Act, whereas there is a misallocation below 15,000 feet. That gas is going for as high as $9 to $10 whereas just a few feet less at 14,990 feet, it gets maybe a third that much. This is because the NGPA deregulates gas from below 15,000 feet, and the near-deep gas is priced under section 102 which is about I think $3.

Senator **Chafee**. Well, I am not expert enough to say on the facts that I have before me. It seems to me you would have to look at the whole business and not just solely that they are not bringing in many wells between 10,000 and 15,000 feet because, for example, I understand that never before has as many drilling rigs been active as they are now, which indicates that there are, I think there are 4,000 rigs, is that right, 2 rigs less than 3,998 rigs, now actively drilling for gas, which indicates that there are incentives out there to get everybody busy.

Senator **Johnston**. I think those are total rigs, and most of those are drilling for oil. Now the drilling is up in terms of dollars, with most of it below 15,000 feet.

Senator **Chafee**. Well, I wouldn't be prepared to concede that totally here now. I would have to know more about the total picture, and as you know, there are a whole host of factors that go into it. Maybe the shallow wells are so tempting now they go more for that, or the ability to go deeper is tempting enough, to put your money in there where there is no controls whatsoever. I just wouldn't be prepared to say.

Senator **Johnston**. I think the Senator is being fair in his outlook, which is to say the facts ought to determine where we put our money, and I think you would also be fair enough to say if the facts do show after we look here that there is a tremendous amount of gas between 10,000 and 15,000 feet not presently being tapped adequately because of the price structure of NGPA that

FERC or we as a committee ought to look at that and see that the incentive prices are correct. Wouldn't you agree with that?

Senator CHAFEE. What I would like to see done is for Congress to do it. Let's do it instead of having the FERC do it.

Senator JOHNSTON. I agree with that.

Senator CHAFEE. If Congress is going to vote on it, let's get the facts out there and vote on it. I am prepared to vote one way or the other.

Senator JOHNSTON. You do concede, of course, that FERC does have that power?

Senator CHAFEE. I do concede that, but the President himself has said that they shouldn't be decontrolled this year, and this is a very substantial step that FERC would be taking, and I would prefer to do it through the congressional method.

Senator JOHNSTON. Thank you, Senator.

Senator CHAFEE. That doesn't mean I would vote for it. I think that is the method by which to proceed.

Senator JOHNSTON. The Senator is fairminded enough I know he will come along.

Senator CHAFEE. With such a persuasive advocate for it, it would certainly require every bit of study that I could devote to it if I ever voted against it.

The CHAIRMAN. Are there other questions?

Senator FORD. I would like to ask a question. One thing about it, Bennett won't quit. I will keep plugging at you.

There is one interesting fact here, Senator, and I am not sure that I am correct in my assumption, but somewhere back during all our trials and tribulations while we viewed the turkey that we have, this new one now, I was impressed by the continuation of effort to deregulate natural gas that was drilled below 15,000 feet. I was impressed by the fact that if they lost on that deep well, they always had gone through a pocket of gas above that, and they had the authority then I think to back up, get their backup gas so they could just draw their pipe back up to the pocket of gas that they had gone through, and that was one of the reasons that I went through that traumatic experience to encourage deregulation of natural gas below 15,000 feet. They have already gone through natural gas. We have already paid that expense, and they have a backup there in case they lose it to deeper depths, that they can back up to the other gas, so this 12-percent decrease and the 28-percent increase in the 15,000 feet or more, I believe, Senator, that they have got their aces back pretty well so don't you be too persuaded by figures.

You will hear a lot of percentages, but don't you be too persuaded by that.

Senator METZENBAUM. Mr. Chairman, first I want to tell you how pleased I am you are conducting these hearings because I have been agreeing too much in recent months with my friend from Louisiana. At least this is a little deja vu. I have got a chance to go back and find a different point of view. I was getting a little worried about myself, but now I know things are all right.

I would like to ask Senator Exon, Jim, what impact would higher gas prices have on the wheat farmers in your State?

Senator **Exon**. Senator Metzenbaum, it would just be further devastating, as I outlined in my testimony. Farm prices generally are approaching dollar for dollar, taking inflation under consideration, about 1938 depression level prices. If we would decontrol natural gas, they would probably have less effect per se on wheat farmers directly than they would on corn and feed grain producers because essentially we do not irrigate wheat, but when you talk about the overall cost that would be associated with the production cost of the wheat farmer, the fertilizer and other factors that I outlined, it would be a further burden that they simply cannot share at this time.

Senator **Metzenbaum**. The impact on fertilizer is a well-known impact, and it has been sort of an education for me to see what higher gas prices do to the cost of fertilizer, but in the farm production effort, what percentage of the cost relates to fertilizer—1 percent, 2 percent? Do you have any idea?

Senator **Exon**. I couldn't give you an exact figure, Senator Metzenbaum, because you have to first recognize and realize that there are different types of farming practices which are used in different parts of the country. Therefore, they require different amounts of fertilizer, but needless to say, substantial portion of the cost of raising a bushel of anything is tied up in fertilizers as a main ingredient.

Now a case in point that proves the idea that you have advanced is the fact that pleasantly the cost of fertilizer has been going down recently as the cost of energy goes down. If we would go ahead with this proposal that you are considering here, it would skyrocket those prices far beyond what they had risen to even under the peak of the cost of energy.

Senator **Metzenbaum**. What you are really saying then is that when you increase gas prices, you are not alone increasing the industrial costs, but you are also talking about the price of food at the supermarket because in the last analysis, as the Farm prices go up, it relates directly to the price of foods in the supermarket and really contributes much to the whole inflationary spiral?

Senator **Exon**. No question about that, Senator Metzenbaum, because we have proof that for every dollar of product raised on the farm, that rattles through the economy seven times and everybody that touches it takes some.

You increase the cost of that first dollar, it is going to rumble through the economy. As I pointed out in my statement, not only should we be concerned about the devastating effect that accelerated decontrol of natural gas would have on homeowners where it would be absolutely devastating, compared right along with that and parallel with it is the effect it would have on industry and the costs of everything that is produced, and the same people who have to pay the increased cost to heat their home are the same people who would also have to pay the increased costs of the products of industry.

Senator **Metzenbaum**. Thank you.

Senator **Exon**. Mr. Chairman, one last point—one of the concerns that you keep hearing about all the time, and the reason for those who are advocating accelerated decontrol, is this so-called price spike or wildly accelerated price increases which may occur in 1985 under the current law. I believe that the committee must examine this issue to determine whether or not it is a valid concern.

A recent January 1981 study by Merrill Lynch has concluded that this price spike will not occur, although much will depend on the uncertainty of the oil market.

If Merrill Lynch is correct, a major reason for accelerated decontrol, therefore, has become a red herring, and I would like to introduce for the record at this time that Merrill Lynch study and also an article in that regard from the Oil and Gas Journal of March 1, 1982.

The **CHAIRMAN**. Rather than print the report in the record, would it be satisfactory if we put it in the committee files and a summary in the record?

Senator **EXON**. I would leave that up to the good judgment of the chairman.

The **CHAIRMAN**. We try to keep the printing costs down.

Senator **EXON**. Amen.

The **CHAIRMAN**. Thank you very much, Senator, and thank you both for your testimony this morning and your interest in the subject matter.

Our next witness is Hon. Erich Evered, Administrator of the Energy Information Administration, the Department of Energy, and Mr. J. Hunter Chiles III, Director of the Office of Policy, Planning and Analysis, Department of Energy, if you will both come forward together with whomever else may be sitting with you and take your places at the table.

Your statement will appear in full in the record. You may proceed to summarize. You have certain appendixes and documents to which you make reference which will not be placed in the record, but will be placed in the file.[1]

Mr. **EVERED**. Thank you, Mr. Chairman. I am pleased to appear before this committee today to discuss the activities of the Energy Information Administration as they relate to the subject of natural gas supplies and markets.

I would be pleased to have my full prepared statement incorporated in the record and abbreviate my remarks this morning.

The **CHAIRMAN**. So ordered.

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[1] Material retained in committee files: Background Information on the Natural Gas Market, three articles reprinted from the Monthly Energy Review, March 1982, DOE/EIA-0324; Report on Alternative-Fuel Burning Capabilities of Large Boilers in 1979, February 1982, DOE/EIA-0304; Natural Gas Pipeline/Producer Contracts, a Preliminary Report, December 1981, DOE/EIA-0312; The Current State of the Natural Gas Market, An Analysis of the Natural Gas Policy Act and Several Alternatives, part 1, December 1981, DOE/EIA-0313; U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 1980 Annual Report, DOE/EIA-0216(80); Intrastate and Interstate Supply Markets Under the Natural Gas Policy Act, October 1981, DOE/EIA-0309; and Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices, August 1981, DOE/EIA-0303.

STATEMENT OF HON. J. ERICH EVERED, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, DEPARTMENT OF ENERGY, ACCOMPANIED BY DR. RICHARD P. O'NEILL, CHIEF, DATA ANALYSIS AND FORECASTING BRANCH; AND KATHLEEN CAVANAUGH, INDUSTRIAL SPECIALIST, OFFICE OF OIL AND GAS

Mr. EVERED. I am accompanied by Dr. Richard P. O'Neill on my left, Chief of the Data Analysis and Forecasting Branch of the EIA's Natural Gas Division.

I will also be assisted with the charts by Ms. Kathleen Cavanaugh, industrial specialist in EIA's Office of Oil and Gas.

The Energy Information Administration regularly collects data, prepares forecasts, and publishes reports on almost all phases of natural gas industry activity. Attached to your copy of the testimony is a list of our recurring and one-time reports on natural gas.

Over the past 9 months, the EIA has published five technical reports on the Natural Gas Policy Act. We have also published less technical summaries in the December, January, and February issues of the Monthly Energy Review. I offer for the committee's use copies of these articles and the technical reports which are also available for the committee's review today, as well as 1980 our annual report of oil and gas reserves.

The fundamental mission, Mr. Chairman, of the Energy Information Administration is to provide objective, accurate, and timely energy information and analysis to decisionmakers within and outside the Government. The EIA is charged to remain independent of the policymaking and regulatory processes, and I am personally committed to that mandate.

I do not intend to debate today the precision or correctness of EIA's analyses or projections. What is important is that we have identified certain problems in the natural gas market which you and others may choose to address at some future time. We will continue to gather the key elements of information the administration and the Congress will need in assessing and coming to grips with those problems.

Turning now to the charts, we find that, until the early 1970's, the average price of natural gas to both intrastate and interstate purchases was about the same. In the early 1970's, intrastate market purchasers were willing to pay more than the Federal Power Commission's regulated interstate price to secure new supplies. The intermarket price difference, along with significant downward revisions to existing reserve estimates, created a situation where the interstate pipeline companies could not maintain their reserve base. As shown in figure 3, the estimate of reserves committed to the interstate market dropped by about 50 percent between 1967 and 1977.

I need not detail for this committee the problems the Nation experienced in the middle 1970's with regard to the impact that reduced deliverability and resulting curtailments had on the natural gas market. The first action to deal with this intermarket problem was FPC Opinion 770. This opinion established new interstate ceiling prices that more than doubled the previous existing ceiling prices and allowed the interstate purchasers to compete for new reserves, to replace their depleted reserve inventories. By 1978, intrastate purchasers were having difficulty replacing reserves as shown in figure 4. This situation still exists today.

In 1978, the NGPA established three basic incentive price categories for the new wells under its sections 102, 103, and 107. As shown in figure 5, new onshore production drilling, that is, the development of known reservoirs, section 103 of the NGPA, has since accounted for most gas drilling, followed by drilling in new reservoirs, section 102, and drilling for high-cost gas, section 107.

While domestic production and consumption have been essentially constant since enactment of the NGPA, the average wellhead price has been increasing at the rate of 25 percent per year, and the average residential price has been increasing at the average rate of 20 percent per year. In order to understand the whole story, these average prices must be examined more closely.

The natural gas market actually consists of many markets segmented by geography, transportation costs, alternative fuels, customer mix, and pipelines' relative endowment of cheap old gas reserves. Figure 6 illustrates the range of variations of prices paid by interstate pipelines under various NGPA sections which are subsequently passed through to the consumer as purchased gas adjustments.

Under the current system of wellhead price controls, with the resulting distortions and economic inefficiencies, there are five major problems in the natural gas market today. First, title I of the NGPA designated that production from several high-cost sources, most significantly production from zones deeper than 15,000 feet, be freed from the price ceiling. In 1980, much of the pre-NGPA gas was sold at prices substantially below the national average price as shown in figure 7.

Currently the highest wellhead price ceiling for natural gas not covered under NGPA's high-cost designation is a bit over $3 per million Btu, while high-cost gas is receiving prices averaging over $6 per million Btu. These data indicate the restrictive nature of the current price ceilings.

Second, these ceilings and the desire to secure more natural gas supplies to meet future needs have created an unusual situation for both new and existing contracts for long-term supplies of natural gas. Since most potential purchasers are willing to pay the ceiling price for new natural gas, they must compete on the basis of other considerations. Consequently, deregulation amendments are being added to existing interstate contracts that require prices tied to crude oil, or home heating oil prices, or the highest prices paid for natural gas in a given region.

Because natural gas contract terms are generally for 15 years or more, such contract provisions can have effects in the future which are not necessarily anticipated when the contract is signed. When the price of large volumes of flowing gas is deregulated under the NGPA in 1985, the wellhead price of natural gas could fly up due to market forces and the escalation provisions currently written into the contract. About 92 percent of old interstate contracts are subject to indefinite escalator clauses. About 70 percent of old intrastate contracts are subject to similar clauses.

Third, most studies done to date, including the EIA's, have projected a fly up in the wellhead price in 1985 based on market clearing forces without the complications of these contract provisions. These studies project a fly up from 25 to 50 percent or more at the wellhead. The contract problem could exacerbate this situation.

Often referred to as the market-ordering problem, the fourth issue involves the ability of interstate purchasers to bid more than intrastate purchasers for gas at the wellhead because of the availability of large quantities of inexpensive, old gas reserves dedicated to the interstate market. Higher-priced new gas can be averaged with the price for old gas in order to make the new interstate gas more marketable. The amount and price of old gas varies significantly between the interstate and intrastate pipelines and among the large interstate pipeline systems as well.

The last issue I would like to mention deals with the downstream portion of the interstate market which has been under regulation for decades, and has been premised on the notion of wellhead regulation by the Federal Energy Regulatory Commission for many years. Many long-term contractual arrangements between gas pipelines and gas distributors are based on the implicit assumption of wellhead price controls. These arrangements pass prices down the system with little recourse. This system has not had to deal with price changes of the size that may come in the next few years. Therefore, any attempt to deal with wellhead price deregulation and other problems cited previously should also focus on the downstream effects that such changes could have on consumers and the gas pipelines and distributors serving those consumers.

The Energy Information Administration is currently engaged in several activities which bear on these issues. First, we are compiling data on current natural gas contract provisions. We expect to complete this study before the summer.

Second, we have undertaken an analysis to determine economic and other market impacts on a regional basis that includes our contract findings and information on the market ordering problem. We expect to complete this effort in the fall.

Third, the EIA has a sizeable volume of drilling, reserves, and production data by depth, and we are in the process of reviewing its near-term utility with regard to the December 1981 proposed rulemaking by the FERC in establishing an incentive price for natural gas wells to be completed between depths of 10,000 and 15,000 feet.

Fourth, we are currently investigating downstream problems of pipelines and distributors that may become important in any future debate on regulatory reform.

EIA's examination and analysis of natural gas markets is a continuing effort. The study published last August was based on information available at that time. It and our December study have examined certain problems in the natural gas market and have identified gaps in the data which we are in the process of filling. We will continue as always to keep this committee informed of our findings.

That concludes my statement, Mr. Chairman.

[The prepared statement of Mr. Evered follows:]

Statement of the Honorable J. Erich Evered
Administrator, Energy Information Administration
Department of Energy
Before the
Senate Committee on Energy and Natural Resources
March 22, 1982

Mr. Chairman, members of the Committee, I am pleased to appear today to discuss the activities of the Energy Information Administration (EIA) as they relate to the subject of natural gas supplies and markets.

The fundamental mission of the EIA is to provide objective, accurate, and timely energy information and analysis to decisionmakers within and outside the Government. The EIA is charged to remain independent of the policymaking and regulatory processes, and I am personally committed to that mandate. I would like to begin my testimony with an overview of the many activities in which the EIA is engaged related to natural gas, then narrow the scope somewhat to focus on specific recent activities.

The EIA regularly collects data, prepares forecasts, and publishes reports on almost all phases of natural gas industry activity.

The EIA also prepares one-time reports as the need arises or as requested by the Congress or another Department of Energy component or Federal agency. From time to time we have prepared special informational reports to serve the needs of a wide audience on relevant issues of the day. Attached to your copy of this testimony is a list of our recurring and one-time reports on natural gas and natural gas liquids. Also identified are reference aids for use by analysts in locating and using the information. We are currently in the process of collecting data which will enable us to summarize 1981 gas industry operations from the wellhead to the burnertip. Let me briefly summarize our most recent information.

Our latest proved reserves estimates for the year ending December 31, 1980, reflect a sustained level of reserves over the 1979-1980 period, due to increased reserve additions and a slight drop in production. These findings, and those for the years since we initiated the reserves survey, are available for you here today.

Domestic natural gas production in 1981 is estimated to have been about 1 percent higher than in 1980. Imports of natural gas amounted to about 4 percent of estimated domestic consumption, and were down almost 12 percent, from 1980 levels. The United States exports less than three-tenths of 1 percent of its natural gas production.

As shown in Figure 1, overall natural gas consumption was down slightly in 1981 from 1980 levels; most of the decrease occurred in the industrial sector.

On a national basis, natural gas remains low-priced for the residential consumer, when compared with other energy sources as shown in Figure 2. Our studies indicate that for most regions, it will remain competitively priced through 1990. These price ranges and underlying assumptions are presented in our recently published 1981 EIA Annual Report to Congress.

In addition to long-term forecasts, each quarter the EIA publishes a Short-Term Energy Outlook covering the next 6 quarters. Our latest short-term forecast reflects the following with regard to 1981 versus 1982 natural gas production and consumption. In 1982, natural gas consumption is projected to rise by about 2 percent, to 20.4 trillion cubic feet. Natural gas production is forecast to decline slightly, with the resulting difference between supply and demand expected to be made up by natural gas imports. Natural gas consumption by the residential, commercial and non-utility industrial users is projected to rise by about 4.8 percent, in part reflecting the continued price advantage of natural gas over distillate and residual fuel oil, notwithstanding recent drops in petroleum prices. Consumption by electric utilities is projected to decline by 9.4 percent as natural gas is, to some extent, displaced by coal and nuclear power generation units coming on line. Residential natural gas prices are projected to rise by 23 percent, in nominal terms, faster than any other residential fuel. During this same period heating oil prices are forecast to increase by about 1 percent and electricity prices by 11 percent.

In the longer-term under the NGPA, natural gas production is projected to decline about 9 percent, to 17.6 trillion cubic feet in 1990. Total consumption is also expected to decline about 10 percent, to 18.3 trillion cubic feet by 1990. This decrease in consumption is projected even though average natural gas prices are still below the prices of alternative fuels, because consumers will react to the continuing increase in prices with further conservation measures. By 1990, residential and commercial natural gas users are projected to consume 0.6 trillion cubic feet less than they did in 1980 while industrial users are expected to increase consumption by a like amount. Also by 1990, electric utilities are forecast to consume 1.6 trillion cubic feet less annually than they did in 1980.

As shown in Figure 2, the national average natural gas price to residential consumers is not projected to reach a Btu-equivalent price with competing petroleum products, although the gas price paid by industrial users is projected to approach the Btu-equivalent price of high-sulfur residual fuel oil in some parts of the country farther from the gas supplies. Even at projected prices that on average are below those of petroleum products, natural gas consumption is not projected to increase. While the number of users may increase, conservation induced by higher prices is expected to reduce consumption of gas by existing users.

In 1980, the EIA began to increase its efforts toward understanding the ramifications of the Natural Gas Policy Act of 1978 (NGPA). This was in part stimulated by Congressional requests that we undertake an analysis of the economic effects of accelerated deregulation of natural gas wellhead prices. It was also stimulated by the fact that such an understanding is necessary for us to develop and publish valid analyses of the statistics which we gather from producers, interstate pipeline companies, distributors, and others.

Over the past nine months, the EIA has published five technical reports on the NGPA. We have also published less technical summaries in the December, January, and February issues of the Monthly Energy Review (MER). (The MER has a subscription readership of about 5,000.) Copies of these articles and the technical reports are available here today.

I would now like to present some of our principal findings, and to identify ongoing efforts which we believe are relevant to an understanding of the NGPA, or to any deviation from its present timetable of partial price-decontrol.

Let me start with a brief dicussion of the natural gas market of the early 1970's. As shown in Figure 3, until the early 1970's the average price of natural gas to both intrastate and interstate purchasers was about the same. In the early 1970's, intrastate market purchasers were willing to pay more than the Federal Power Commission's (FPC) regulated interstate price to secure new supplies. The intermarket price difference along with significant downward revisions to existing reserves estimates, created a situation where the interstate pipeline companies could not maintain their reserve base. As shown in Figure 3, the estimate of reserves committed to the interstate market dropped by about 50 percent between 1967 and 1977.

I need not detail for this Committee the problems the nation experienced in the middle 1970's with regard to the impact that reduced deliverability and resulting curtailments had on the natural gas market. The first action to deal with this intermarket problem was FPC Opinion 770. This Opinicn established new interstate ceiling prices that more than doubled the previous existing ceiling prices, and allowed the interstate purchasers to compete for new reserves to replace their depleted reserve inventories. The competition for new supplies between interstate and intrastate pipelines had its principal effect on the intrastate market. By 1978, intrastate purchasers were having difficulty replacing reserves as shown in Figure 4. This situation still exists today. These swings in the market are in part what is referred to as "regulatory lag"--the time lag between a problem's occurrence and a regulatory response.

In 1978, the NGPA established three basic incentive price categories for the new wells under its Sections 102, 103, and 107. As shown in Figure 5, new onshore production drilling (the development of known reservoirs (Section 103)) has since accounted for most gas drilling, followed by drilling in new reservoirs (Section 102), and drilling for "high-cost" gas (Section 107).

While domestic production and consumption have been essentially constant since enactment of the NGPA, the average wellhead price has been increasing at the rate of 25 percent per year and the average residential price has been increasing at an average rate of 20 percent per year. (These factors include inflation.) In order to understand the whole story, these average prices must be examined more closely.

The natural gas market actually consists of many markets segmented by geography, transportation costs, alternative fuels, customer mix, and pipelines' relative endowments of cheap old-gas reserves. As a result, some industrial users in the Southwest are paying less than $.50 per MMBtu while residential users in the Northeast and Midwest are paying more than $6.00 per MMBtu. These extremes are not necessarily a function of the user, as some industrial users also pay high prices. Figure 6 illustrates the range of variations of prices paid by interstate pipelines under various NGPA sections, which are subsequently passed through to the consumer as purchased gas adjustments. Different endowments of each category of gas lead to different average costs.

A number of analysts believe that the future market price for natural gas will be determined by the price of residual fuel oil in the industrial boiler fuel market, because some industrial users have the ability to switch from natural gas to residual fuel oil with virtually no additional cost. Therefore, if the price of natural gas were higher than the price of residual fuel oil, these users would switch. We believe this is an oversimplification. Historically and on a national basis, industrial users have paid on the average 60 percent or less (on an equivalent heat value basis) for natural gas than for residual fuel oil. Further, due to the nature of the delivery system for natural gas, industrial gas prices are often discounted in return for interruptible service when delivery capacity is needed for higher priority users, e.g., residential and commercial users.

Some analysts have also suggested the existence of large amounts of latent and/or frustrated demand based on past curtailments, hook-up moratoria and other considerations. Data which might be used to support this position are difficult to interpret or were not available. Certainly some of this demand has been lost to conservation. Based on recently collected information, EIA estimates the potential latent demand of the large industrial boiler market, perhaps the largest potential for latent demand, at less than half a Tcf, or less than 3 percent of the natural gas market. This is an estimate of the amount of fuel oil which could be replaced by natural gas in large boilers designed to burn both. At this time there are no additional data on other (e.g., small boiler) industrial uses which would allow precise estimates to be made on the total size of latent demand.

Under the current system of wellhead price controls, with the resulting distortions and economic inefficiencies, there are five major problems in the natural gas market today:

- the wellhead price structure,
- the contracts problem,
- the 1985 price "fly-up",
- the market ordering problem, and
- downstream regulatory practices.

Title I of the NGPA designated that production from several "high-cost" sources, most significantly production from zones deeper than 15,000 feet, be free from price ceilings. In 1980 much of the pre-NGPA gas sold at prices substantially below the national average price as shown in Figure 7. Currently, the highest wellhead price ceiling for natural gas not covered under the NPGA's high-cost designation is a bit over $3 per MMBtu, while high-cost gas is receiving prices averaging over $6 per MMBtu. These data indicate the restrictive nature of the current price ceilings.

These ceilings and the desire to secure more natural gas supplies to meet future needs have created an unusual situation for both new and existing contracts for long-term supplies of natural gas. Since most potential purchasers are willing to pay the ceiling price for new natural gas, they must compete on the basis of other considerations. Consequently, deregulation amendments are being added to existing interstate contracts that require prices tied to crude oil or home heating oil prices or the highest prices paid for natural gas in a given region, as shown in Figure 8. Activation of these "redetermination" deregulation clauses is automatic, other deregulation clauses require renegotiation. Because natural gas contract terms are generally for 15 years or more, such contract provisions can have effects in the future which are not necessarily anticipated when the contract is signed. When the price of large volumes of flowing gas is deregulated under the NGPA in 1985, the wellhead price of natural gas could "fly-up" due to market forces and the escalation provisions currently written into the contracts. As shown in Figure 8, 92 percent of old interstate contracts are subject to indefinite escalator clauses. As shown in Figure 9, about 70 percent of old intrastate contracts are subject to indefinite escalator clauses.

Most studies done to date, including the EIA's, have projected a "fly-up" in the wellhead price in 1985 based on market clearing forces without the complications of these contract provisions. These studies project fly-ups from 25 to 50 percent or more at the wellhead. The contract problem could exacerbate this situation.

A fourth problem, often referred to as the market ordering problem, involves the ability of interstate purchasers to bid more than intrastate purchasers for gas at the wellhead because of the availability of large quantities of inexpensive, old gas reserves dedicated to the interstate market. Higher-priced new gas can be averaged with the price for old gas in order to make the new interstate gas more marketable. The amount and price of old gas not only varies significantly between the interstate and intrastate pipelines, but it also differs significantly among the large interstate pipeline systems as well. The market ordering problem is further complicated by the contract problem.

The last issue I would like to mention deals with the downstream portion of the interstate market which has been under regulation for decades, and has been premised on the notion of wellhead regulation by the FERC for many years. Many long-term contractual arrangements between gas pipelines and gas distributors are based on the implicit assumption of wellhead price controls, and pass prices "down the system" with little recourse. This system has not had to deal with price changes of the size that may come in the next few years. Therefore, any attempt to deal with wellhead price deregulation and other problems cited above should also focus on the downstream effects that such changes could have on consumers and the gas pipelines/distributors serving these consumers.

We are currently engaged in several activities which bear on these issues:

First, we are compiling data on current natural gas contract provisions. In October 1981, we initiated a survey of about 400 producers and purchasers of natural gas which we selected statistically from individual well determination filings submitted to the FERC. We expect to complete this study before the summer.

Second, we have undertaken an analysis to determine economic and other market impacts on a regional basis that includes our contract findings and information on the market ordering problem. We expect to complete this effort in the fall.

Third, the EIA has a sizeable volume of drilling, reserves and production data by depth, and we are in the process of reviewing its near-term utility with regard to the December 1981 proposed rulemaking by the FERC in establishing an incentive price for natural gas wells completed between 10,000 and 15,000 feet.

Fourth, we are currently investigating downstream problems of pipelines and distributors that may become important in any future debate on regulatory reform.

This concludes my prepared statement. I hope the information I have provided will help you in your deliberations. Of course as we complete and publish additional analyses, we will make them available to the Committee. I also solicit the Committee's advice on other aspects of these issues deserving investigation. I would now be pleased to answer any questions you have.

REFERENCES FOR FIGURES

Figure 1.	Natural Gas Consumption by End-Use. (1950 through 1980 data from page 84, Source 1.)
Figure 2.	Residential Sector Prices. (1960 through 1979 data from page 97, Source 1; 1982, 1985, and 1990 data from page 155, Source 2.)
Figure 3.	Lower-48 Natural Gas Reserves and Average Purchaser Acquisition Price. (From page 9, Source 1.)
Figure 4.	Lower-48 Natural Gas Reserves, Onshore. (Developed from Figure 17 histogram on page 41, Source 1.)
Figure 5.	Wells by NGPA Title I Section. (From Figure 5 on page 24, Source 1.)
Figure 6.	Average Acquisition Cost for Selected Interstate Pipelines. (Developed from Table 17 on page 63, Source 1.)
Figure 7.	1980 Natural Gas Supply Market. (From page 46, Source 1.)
Figure 8.	Current Price Provisions for Pre-NGPA Interstate Contracts. (Developed from Table 22 on page 73, Source 1.)
Figure 9.	Escalator Clauses for Intrastate Contracts that Do Not Roll Over in 1985. (Developed from Table 27 on page 79, Source 1.)

SOURCES

1. The Current State of the Natural Gas Market, Analysis of the Natural Gas Policy Act and Several Alternatives, Part I, DOE/EIA-0313, December 1981.

2. 1981 Annual Report to Congress, Volume 3, DOE/EIA-0173(81)/3, February 1982.

Figure 1

NATURAL GAS CONSUMPTION BY END-USE SECTOR

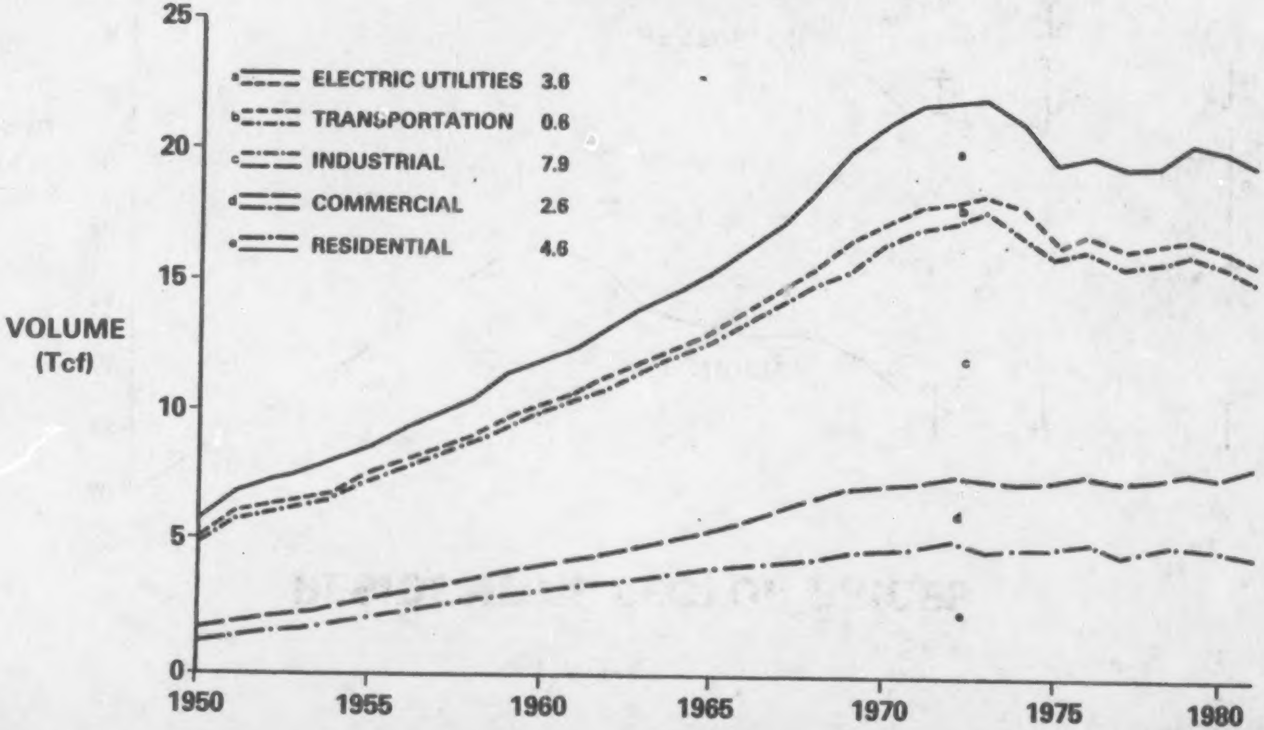


Figure 2

RESIDENTIAL SECTOR PRICES

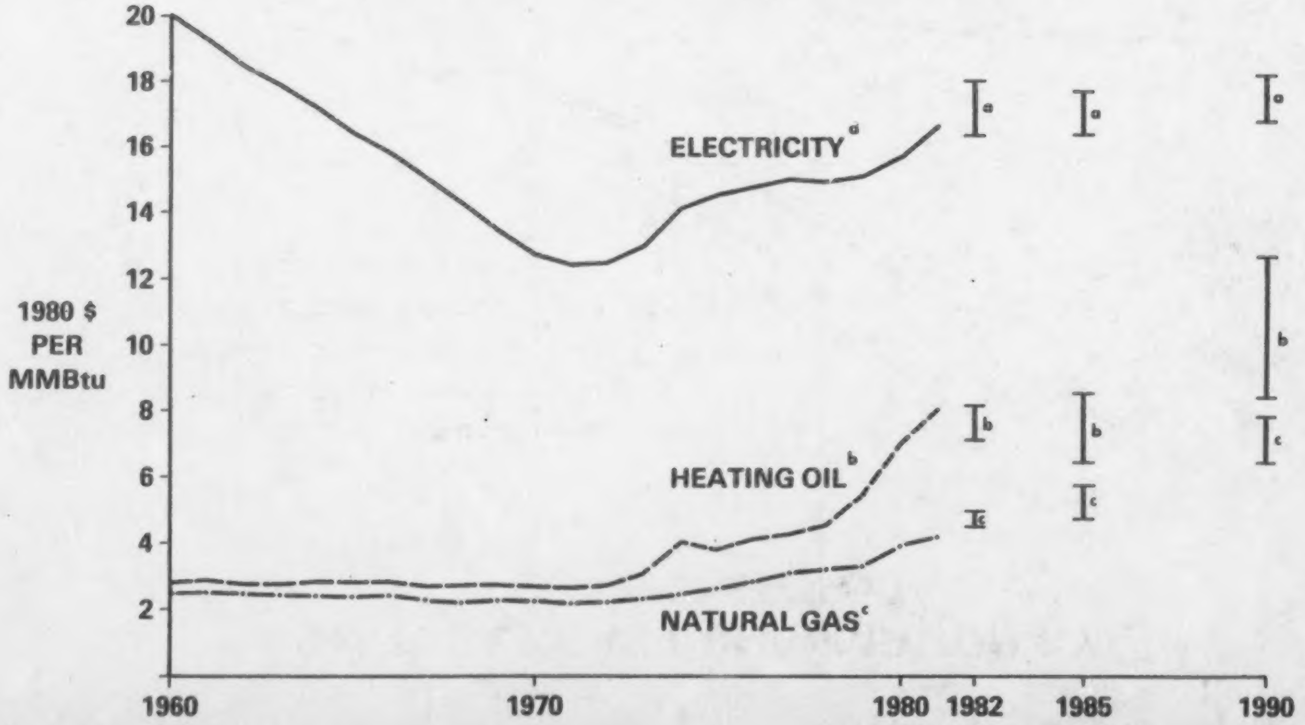
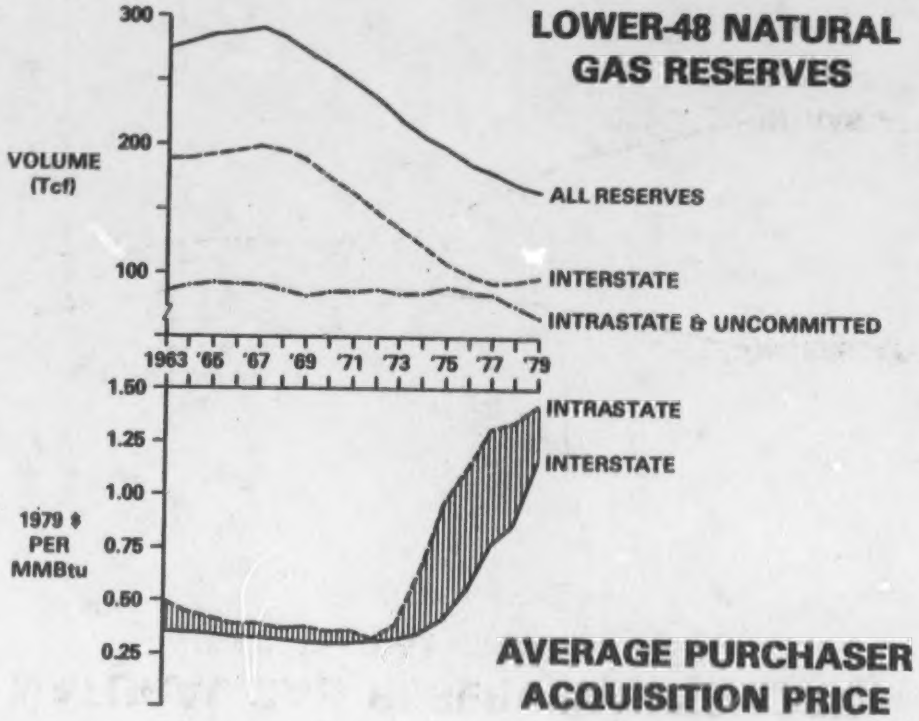


Figure 3



LOWER-48 NATURAL GAS RESERVES

AVERAGE PURCHASER ACQUISITION PRICE

Figure 4

LOWER-48 NATURAL GAS RESERVES, ONSHORE
(EIA DATA)

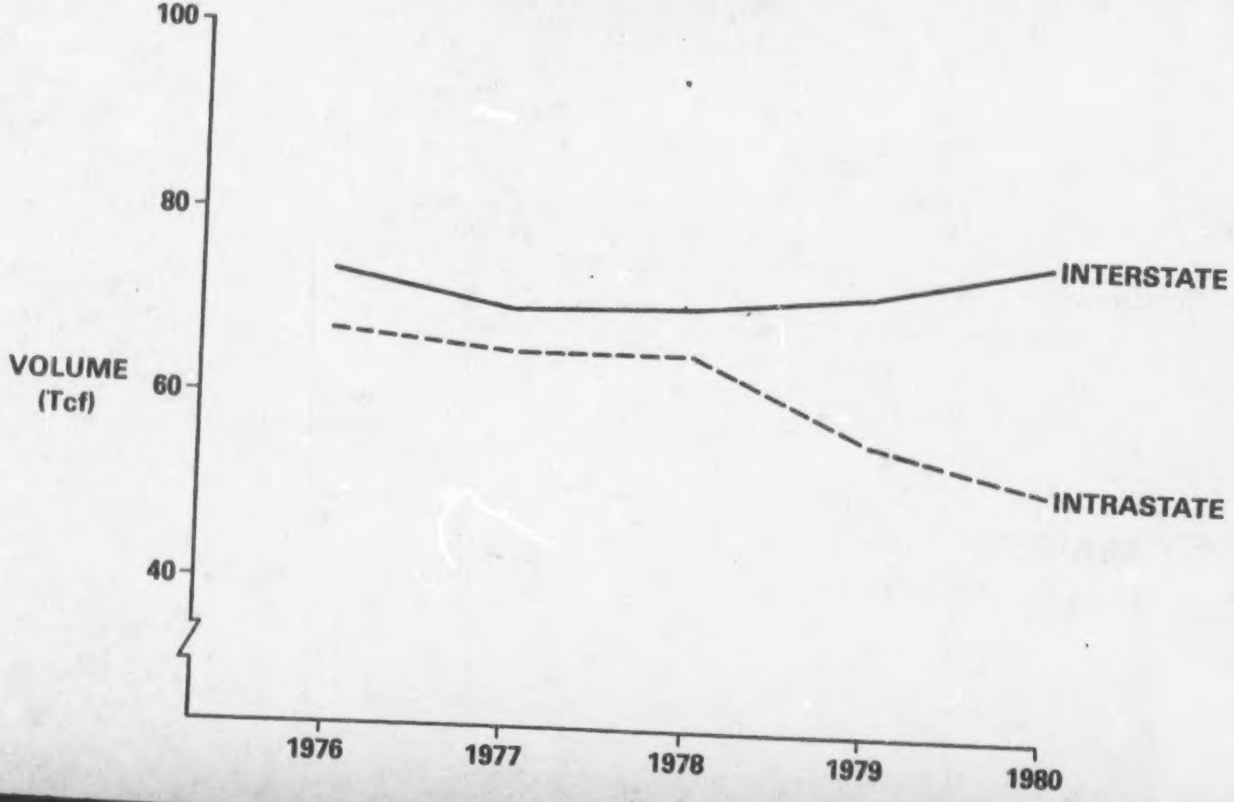


Figure 5

WELLS BY NGPA TITLE I SECTION

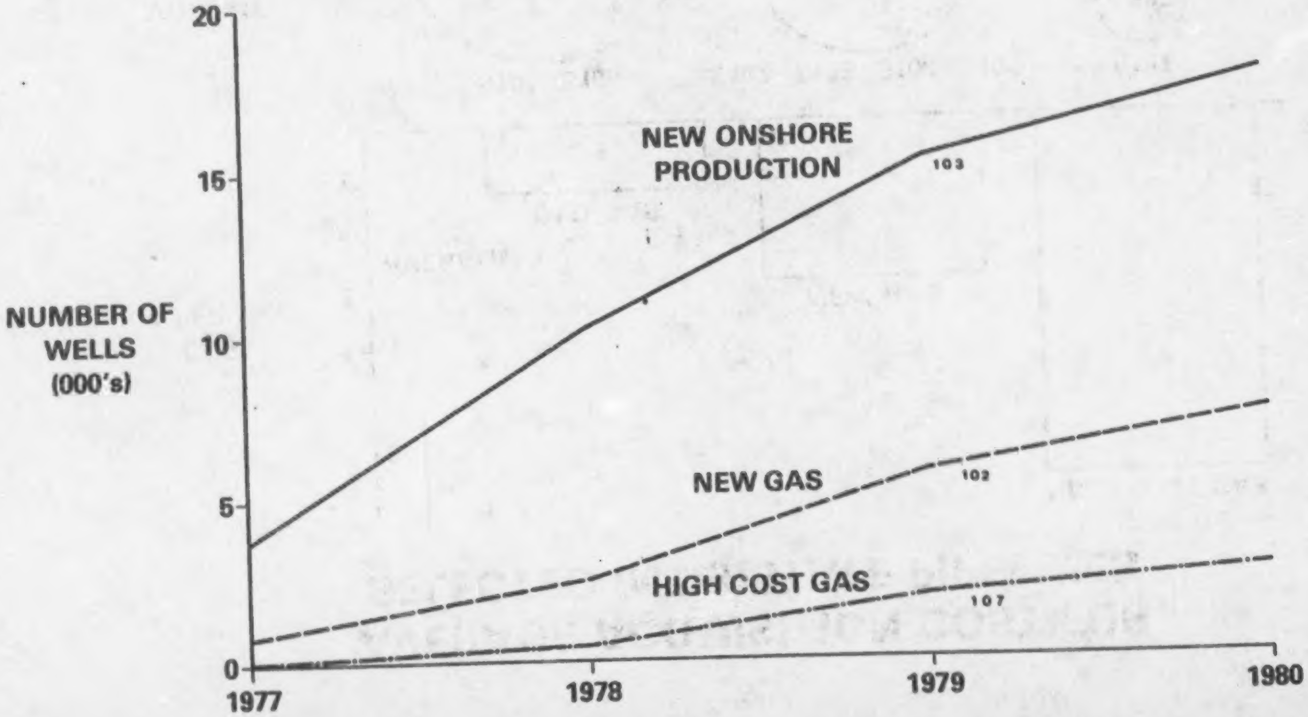
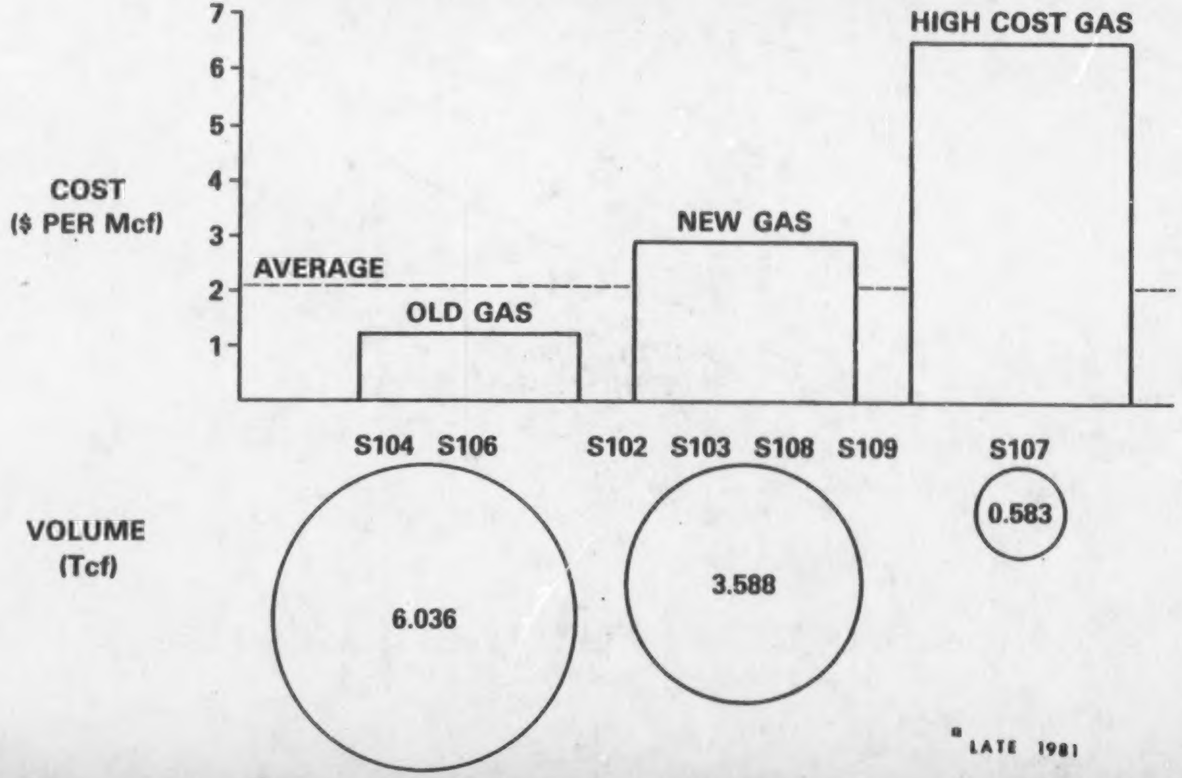


Figure 6

AVERAGE ACQUISITION COST FOR SELECTED INTERSTATE PIPELINES[a]



[a] LATE 1981

Figure 7

1980 NATURAL GAS SUPPLY MARKET

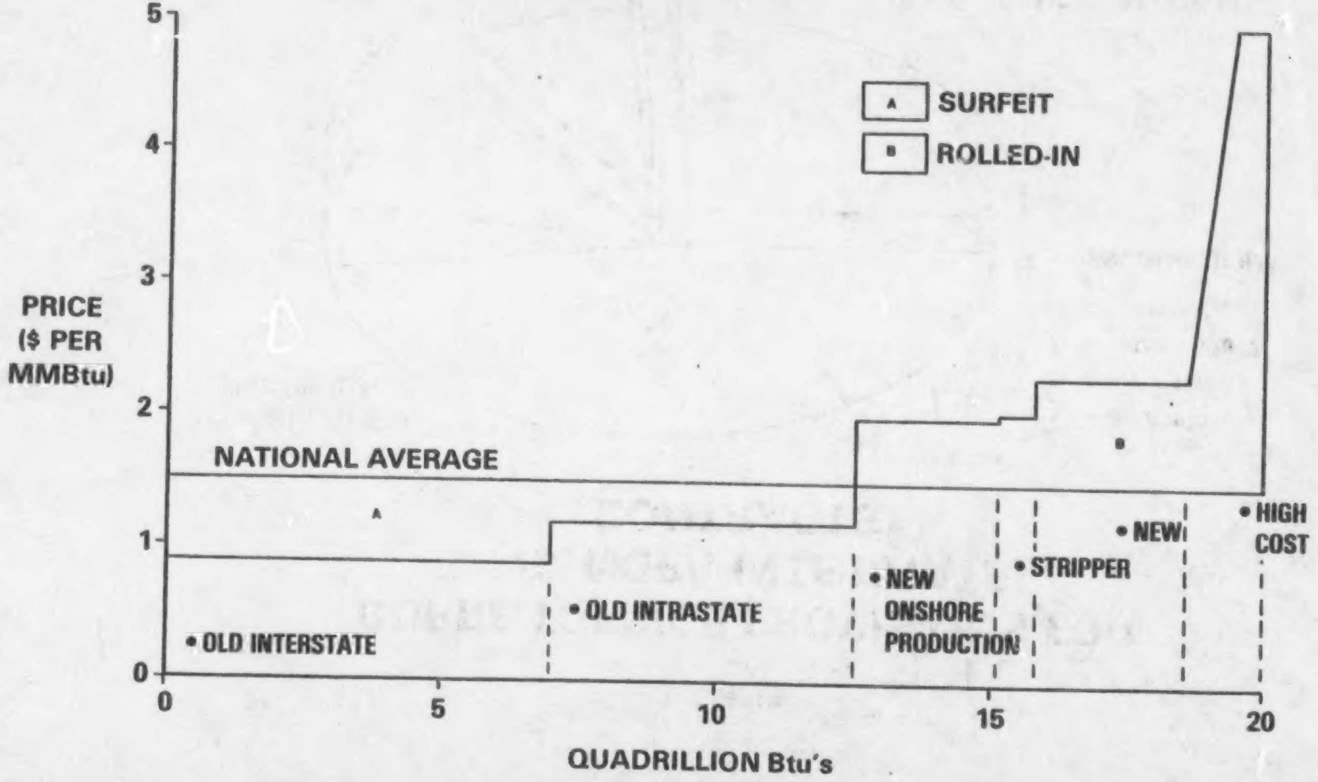
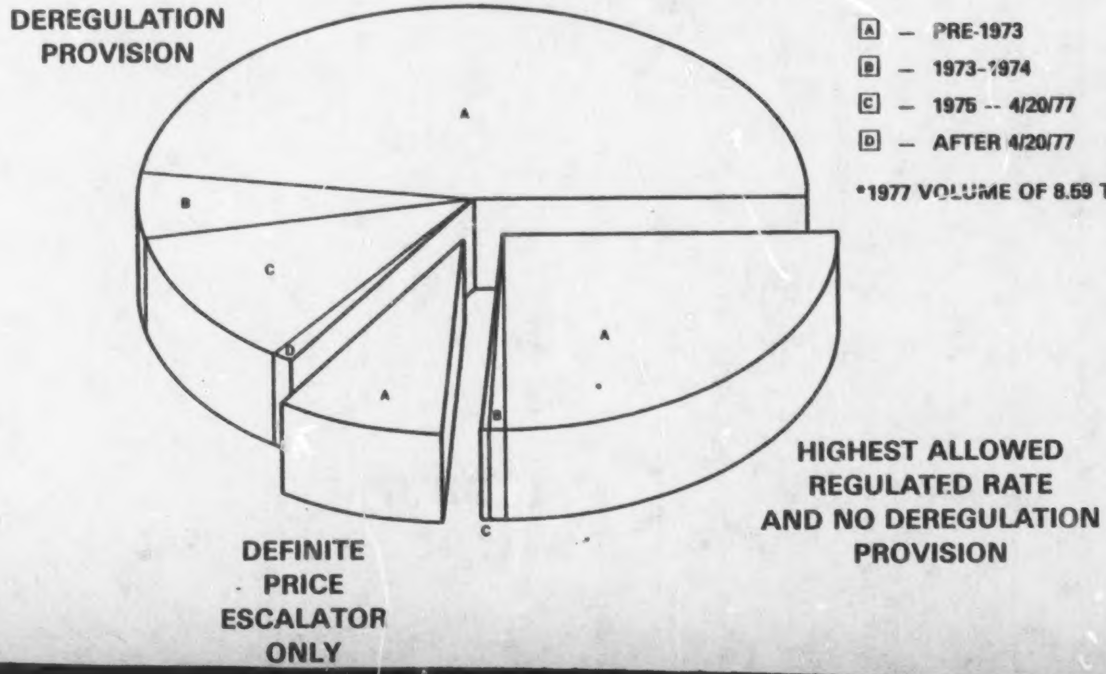


Figure 8

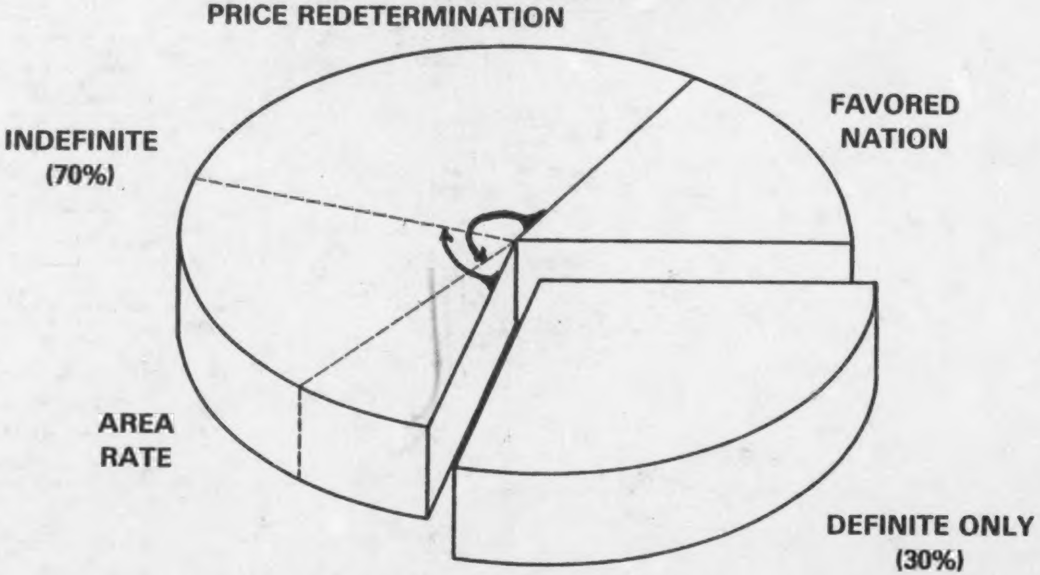
CURRENT PRICE PROVISIONS FOR PRE-NGPA INTERSTATE CONTRACTS*



*1977 VOLUME OF 8.59 Tcf

Figure 9

ESCALATOR CLAUSES FOR INTRASTATE CONTRACTS THAT DO NOT ROLL OVER IN 1985*



*1978 VOLUME OF 4.69 Tcf

LIST OF NATURAL GAS AND NATURAL GAS LIQUIDS

PUBLICATIONS

TITLE	DESCRIPTION
1. An Analysis of Economic Effects of Accelerated Deregulation of Natural Gas (DOE/EIA-0303).	• Effects of deregulation in 1982 and 1983 on price and the economy • NGPA Schedule of decontrol
2. Gas Supplies of Interstate Natural Gas Pipeline Companies (DOE/EIA-0167(79)), December 1981.	• Current Gas Supplies • Historical Information • Specifics: Reserves, Production, Revisions to Reserves, Additions to Reserves, Deliverability by Interstate Pipeline Companies
3. Intrastate and Interstate Supply Markets Under the Natural Gas Policy Act (DOE/EIA-0309), October 1981.	• Effects of NGPA on sales and prices in both markets • History of Natural Gas Markets • Also compares - Contractor prices; - Sales quantities - Rollover contracts; - Escalator clauses in pre-NGPA intrastate market contracts
4. Main Line Natural Gas Sales to Industrial Users: 1980 (DOE/EIA-0129(80)), February 1982.	• Direct sales by interstate pipeline companies to industrial users • Includes: - Seller - Customer - Standard Industrial Classification - Type sales - Delivery point - State
5. Natural Gas Monthly Report (DOE/EIA-0130).	• For 16 largest producing States and U.S. total - Marketed Production - Imports - Exports

LIST OF NATURAL GAS AND NATURAL GAS LIQUIDS (Continued)

PUBLICATIONS

TITLE	DESCRIPTION
6. The Natural Gas Market Under the Natural Gas Policy Act (DOE/EIA/AR-0289), June 1981.	• Status of NGPA • NGPA effects on Exploration Development Production Pricing
7. Underground Natural Gas Storage in the United States 1980-1981 Heating Year (April 1980-March 1981) (DOE/EIA-0239 (80) Annual, August 1981.	• Lists capacity and location of all U.S. underground storage operations - interstate, independent and intrastate • Lists - Amount of gas stored - Injections and withdrawals
8. Underground Storage of Natural Gas by Interstate Natural Gas Pipeline Companies for 1979 and Winter 1979-1980 (DOE/EIA-0151(79)), January 1981.	• Interstate only • Lists - Storage - Deliverability - Peak Day Use - Cost of Storage - Other Cost Comparisons
9. U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves (DOE/EIA-0216(80)), October 1981.	• Natural Gas and Natural Gas Liquids and Crude Oil • Complete national and geographic breakdown of reserves and production
10. Natural Gas Annual (DOE/EIA-0131), February 1982.	• Identifies the flow of Natural Gas from production to consumption • Lists quantities and values by State for each point in gas flow • Breaks down consumption by consumer category • Shows geographic comparisons and historical trend

LIST OF NATURAL GAS AND NATURAL GAS LIQUIDS (Continued)

PUBLICATIONS

TITLE	DESCRIPTION
11. United States Imports and Exports of Natural Gas, 1980 (DOE/EIA-0188(80)), July 1981.	• All import and export of Natural Gas and LNG • Aggregate Volumetric and Price Data • Current and Historical
12. Statistics of Interstate Natural Gas Pipeline Companies, 1980 (DOE/EIA-0145(80)), December 1981.	• Major Interstate Pipeline Companies (Class A and B only) • Financial Data by Company and in Aggregate
13. Natural Gas Pipeline/Producer Contracts: A Preliminary Analysis (DOE/EIA-0312), December 1981.	• Provides a preliminary assessment of current natural gas contract provisions • Principal areas of focus are: - interstate contracts in force prior to NGPA - Pre-NGPA contracts in intrastate markets - Post-NGPA offshore contracts on file at FERC - Some post-NGPA onshore interstate contracts are included
14. The Current State of the Natural Gas Market: An Analysis of the Natural Gas Policy Act and Several Alternatives, Part I (DOE/EIA-0313), December 1981.	• Presents estimates of gas production, prices, and consumption patterns • Presents estimates of drilling and volumetric flows of gas under wellhead pricing categories of the NGPA • Presents the results of an analysis of natural gas contracts and purchased gas adjustment filings

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LIST OF NATURAL GAS AND NATURAL GAS LIQUIDS (Continued)

PUBLICATIONS

TITLE	DESCRIPTION
15. The Oil and Gas Drilling Industry (DOE/EIA-0308), October 1981.	• Analyzes market structure and services of individual groups within the industry • Description of drilling equipment and a glossary of drilling equipment terms • Description of the drilling process
16. Sales of Liquefied Petroleum Gases and Ethane in 1980, (DOE/EIA-0114(80)), December 1981.	• Shows sales of liquified petroleum gases by type
17. Cost of Indexes for Domestic Oil and Gas Field Equipment and Production Operations, 1980 (DOE/EIA-0185(80)), February 1981.	• Oilfield equipment and/or operating costs
18. The National Interim Energy Consumption Survey: Explaining the Variability in Energy Consumption (DOE/EIA-0272), July 1981.	• Summarizes results of National Interim Energy Consumption Survey
19. State Energy Data Report - Statistical Tables and Technical Documentation (1960-1969) (DOE/EIA-0214(79)), September 1981. Also, State Energy Data Reports Supplement (DOE/EIA-0214(79)S), October 1981.	• Summarizes multi-year statistics for production, consumption and other factors by State

REPORTS COVERING NATURAL GAS, NATURAL GAS LIQUIDS, AND OTHER ENERGY SOURCES

TITLE	DESCRIPTION
1. Monthly Energy Review, (DOE/EIA-0035).	• Published monthly • Provides national aggregate data for natural gas, natural gas liquids, and other energy sources
2. 1981 Annual Report to Congress (DOE/EIA-0173(80)), February 1982.	• Published annually in three volumes - Volume I summarizes organizational activities, forms, and models; - Volume II contains historical aggregate data; and - Volume III presents forecasts of the energy future. • Covers natural gas, natural gas liquids, and other energy sources
3. Short-Term Energy Outlook (DOE/EIA-0202/9-1), November 1981.	• Published quarterly • Provides forecasts for next six quarters for natural gas and other energy sources
4. Performance Profiles of Major Energy Producers, 1980, (DOE/EIA-0206(80)), December 1981.	• Published annually • Summarizes Financial Reporting System (FRS) data from major selected firms
5. Crude Petroleum, Petroleum Products, and Natural Gas Liquids: 1980 (DOE/EIA-0108(80)), December 1981.	• Published annually • Summarizes refinery and gas plant operations
6. 1980 International Energy Annual (DOE/EIA-0219(80)), September 1981.	• Published annually • Presents reserves, production and other data for the U.S. and other nations

SELECTED DATA REFERENCE REPORTS

TITLE	DESCRIPTION
1. Directory of Energy Data Collection Forms (DOE/EIA 0249(81/1)), May 1981.	• List and describes all EIA data collection forms
2. 1980 EIA Publications Directory A User's Guide (DOE/EIA-0149(80)), June 1981.	• Lists and describes all EIA reports published in 1980
3. EIA Data Index: An Abstract Journal, First Supplement: July - December 1980 (DOE/EIA-0233(80/2)), August 1981.	• Provides an index to data contained in EIA reports

Short-Term Energy Outlook, February 1982

Executive Summary and Forecast Tables

March 22, 1982

EXECUTIVE SUMMARY

Introduction

Between 1980 and 1981, total energy use in the United States fell by an estimated 2.7 percent to approximately 74 quadrillion Btu. The principal causes of this decrease were the higher energy prices during 1981, the continued reaction to the doubling of petroleum prices during the preceding 2 years, and slow economic growth. Almost all the decline in energy use can be accounted for by the approximately 2 quadrillion Btu--6.3 percent--decline in petroleum consumption. While petroleum use and total energy consumption were declining during 1981, coal consumption increased by approximately a third of a quadrillion Btu to reach its highest level in history.

The forecasts of energy consumption are highly dependent on assumptions about world oil prices and U.S. economic growth. The near-term future is particularly uncertain in both of these areas. World oil prices have declined moderately over the past year following the rapid increases of 1979 and 1980. This decrease has been due primarily to reduced demand from the industrial nations, the consumption of petroleum from inventories, and the efforts of several producing countries to increase their exports of crude oil.

The current EIA projections for energy consumption during 1982 and the first half of 1983 are made using three alternative world oil price trajectories. One possibility is that world oil prices continue to fall if exporting countries try to increase their sales through price competition in a period of stagnant world demand. Another possibility is that prices will be stabilized near their current level as a result of decreases in OPEC production that would be large enough to reduce further price competition long enough for market forces (an increase in demand due to a resumption of economic growth and/or a return to stable inventory levels) to stabilize the world oil market. Finally, world oil prices could increase sharply again due to some combination of a rapid growth in world demand and a reduction in export potential due, perhaps, to an increase in hostilities between Iran and Iraq. In the context of rapid changes in the outlook for energy, the role of short-term forecasting is one of providing a framework for estimating the effects of recent shifts in the major determinants of energy flows.

In the base case, the nominal price of imported crude oil is assumed to be constant at the late January 1982 level of $35.41 per barrel until the end of 1982, then rise at approximately the rate of U.S. inflation during 1983. In the low price case, prices fall to a $30 OPEC marker price in late 1982 and increase at less than the U.S. rate of inflation in 1983. In the high price case, prices rise at two times the rate of U.S. inflation in 1982 and three times the rate of inflation in 1983, reaching a price of $43.95 in the second quarter of 1983. When this report went to final clearance in late March, the average price for crude oil had dropped approximately $1 per barrel below the late-January level and an emergency meeting of the Organization of

Petroleum Exporting Countries (OPEC) had been called. Although none of the world oil price cases should be regarded as the single best estimate of these prices, the range of cases given is believed to encompass the most likely developments. Product prices have generally followed the recent rapid developments in world oil prices: there are already preliminary indications, based on February and early March gasoline prices, that the average first quarter price will be a few cents below that which was forecast for the first quarter in the base case.

The forecasts are also heavily dependent on the underlying macroeconomic forecast. The energy projections presented in this Outlook are based on the assumption that econonomic growth resumes at an approximately 4 percent annual rate in the third quarter of 1982 and that industrial production rises by 9 percent between the first halves of 1982 and 1983. The potential effects of alternative assumptions about economic growth, as well as other factors, such as weather and petroleum inventory policies, are considered in various "sensitivity" cases.

The Outlook

In the base case projection, total energy consumption during 1982 rises 1.5 percent from 1981 levels, while the volume of petroleum used falls by 0.4 percent. Trends in the consumption of energy, particularly petroleum, will depend on the strength and duration of the resumption in economic growth that is assumed to occur in the second half of 1982. They also depend critically on the degree of continuing impetus toward greater conservation of energy in response to the major oil price increases that occurred in the 1970's. If economic growth occurs as forecast, particularly if industrial production increases by 9 percent, total energy consumption is projected to increase by over 4 percent between the first halves of 1982 and 1983. Figure 1 shows recent and projected trends for U.S. energy production, consumption, and net imports. Figures 2 and 3 illustrate the major fuels comprising total energy production and consumption projected through the second quarter of 1983.

Recent issues of the Outlook have consistently overestimated total petroleum product supplied. This is partly a result of lower-than-expected rates of economic activity, but the most recent declines have been larger than can be explained even by recent declines in industrial activity. This decline is most likely a result of continued adjustments to the large price increases of the 1970's. It may also be, in part, a temporary decline caused by decreases in secondary and tertiary stocks. In any case, the forecasting models have not fully captured or anticipated these decreases. Attempts have been made to adjust the models for this Outlook to reflect these recent declines in petroleum demand. Largely as a result of these changes, the current forecast of petroleum demand is lower than in the previous Outlook. Some overestimation may persist, however, due to structural shifts in petroleum demand not captured by the models. Preliminary data for January and February show total petroleum products supplied (and therefore petroleum imports) well below the level forecast in this Outlook. These declines may be reversed, however, if lower prices, resumed economic growth, and/ or increases in secondary stocks cause the demand for petroleum production to increase.

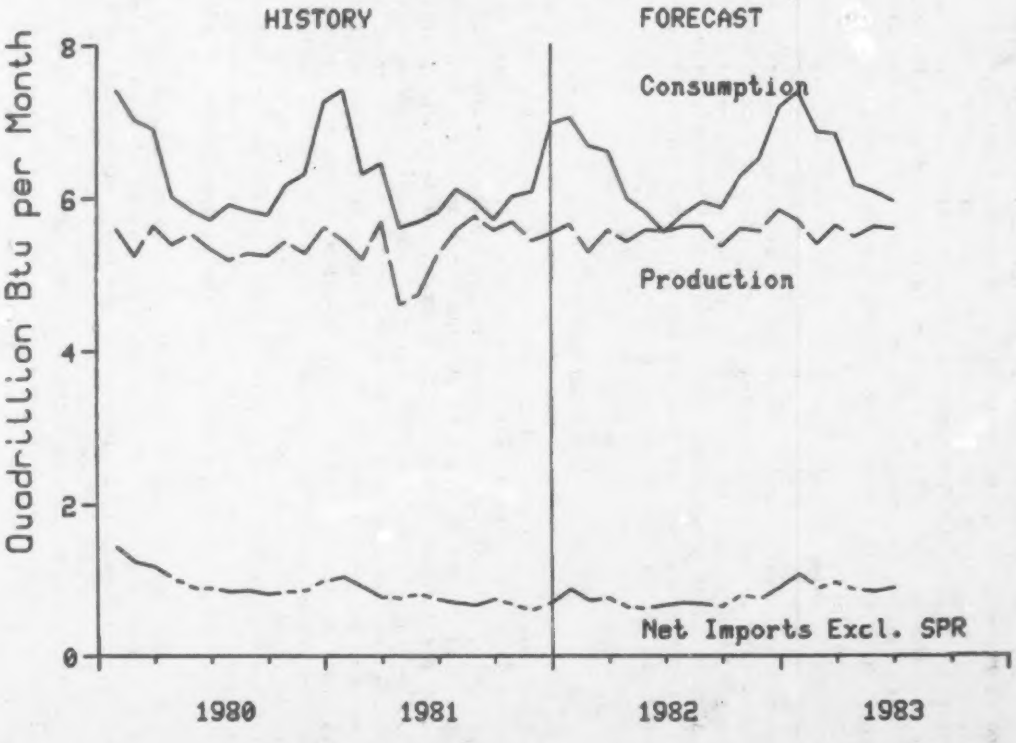
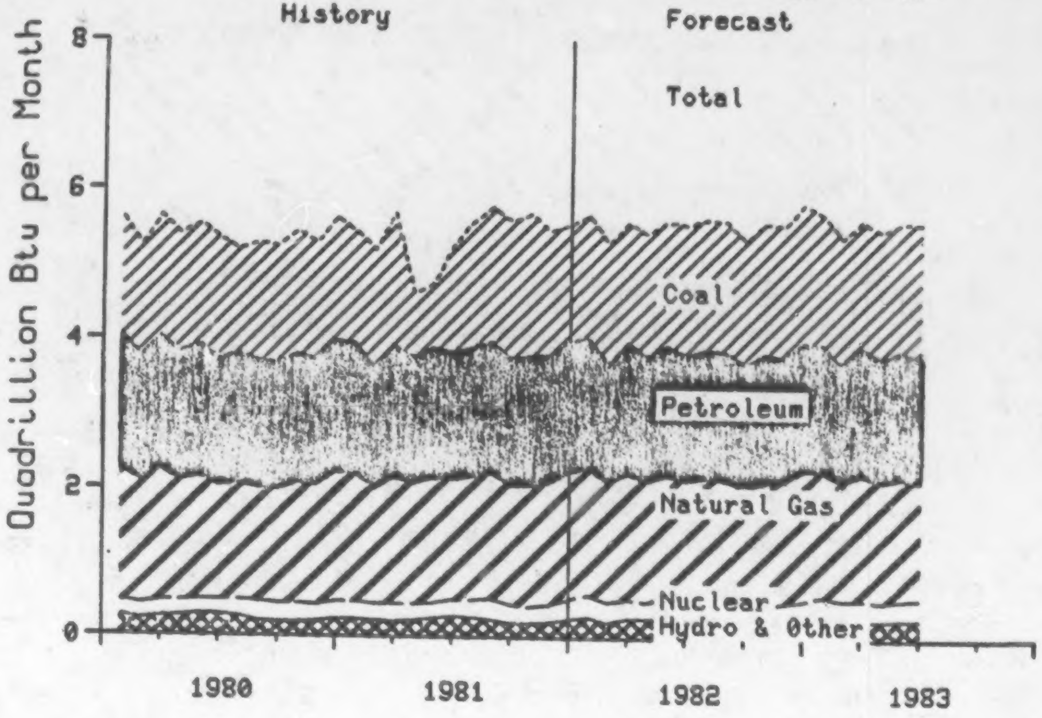


Figure 1. Total Energy Outlook

Figure 2. Monthly Production of Energy by Type



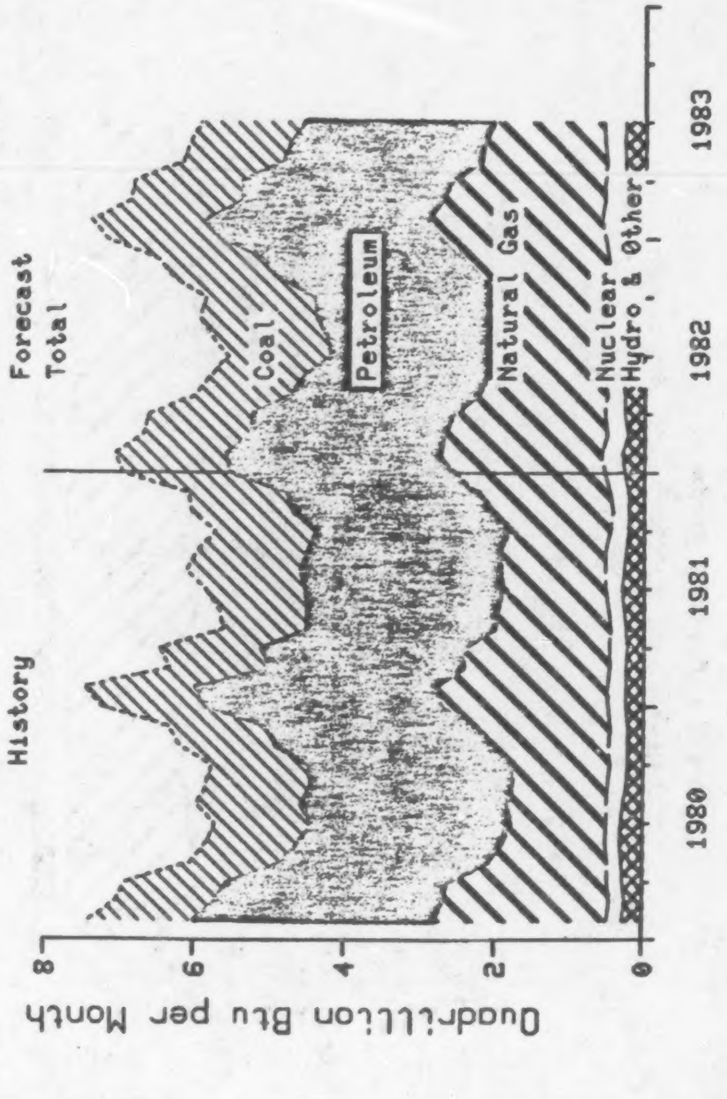


Figure 3. Monthly Consumption of Energy by Type

Total Petroleum. Current petroleum supplies appear to be more than adequate. During 1982, petroleum consumption is projected to decline by 0.4 percent to 16.0 million barrels per day. However, petroleum use in the base case is forecast to rise by over 5 percent between the first halves of 1982 and 1983, due primarily to the 9 percent increase in industrial production. Domestic crude oil production is projected to decline by about 1 percent to 8.5 million barrels per day in 1982, then fall 1.4 percent between the first halves of 1982 and 1983. Table 1 summarizes the base case projections for petroleum.

Petroleum Imports

In the 1982 base case, total imports of petroleum (which include those for the Strategic Petroleum Reserve (SPR)) are projected to decline by less than 1 percent to 6.0 million barrels per day, then rise to 7.1 million barrels per day in early 1983. This rise is primarily a result of the improved economic conditions that are forecast as well as the return to a more stable inventory path. The total cost of oil imports, measured on a balance of payments basis, declined by 2 percent in 1981, and is forecast to decline by an additional 5 percent, to $73 billion in 1982. The projected 2-year decline in the total cost of oil imports is forecast to be reversed as oil imports rise by more than 20 percent above year-earlier levels in the first half of 1983.

Petroleum Inventories

The future course of domestic petroleum inventories is particularly uncertain because of its sensitivity to expectations about future petroleum markets, economic conditions, and the possibility that industry inventory behavior may affect the pricing policies of the major producing countries. Changes in domestic inventory policies generally affect near-term imports, since petroleum withdrawn from stocks can be used to replace imports, and stock buildups usually require additional imports. In the projections presented, petroleum inventories are assumed to decline by 71 million barrels (5.7 percent) during 1982 and by an additional 12 million barrels in the first half of 1983. These reductions reflect an assumed downward adjustment of inventories from their high current levels in response to: 1) the prospect of continued, relatively low levels of petroleum demand, 2) the previous year's declining prices, and 3) high short-term interest rates which result in very high costs for holding inventories. Year-end petroleum stocks for 1977 through 1980 averaged 70 days' supply. At the end of 1981, stocks amounted to 79 days' supply. The stock drawdown and consumption slow-down projected for 1982 would bring yearend stocks to 74 days' supply.

Motor Gasoline

Motor gasoline consumption declined by 270,000 barrels per day (almost 4 percent) between 1980 and 1981. This decline is projected to be reversed in 1982 as consumption rises by 1.5 percent to 6.7 million barrels per day. The principal reasons for this projection are the decline in the real price of gasoline and a downward revision in the outlook for auto efficiency improvement. Gasoline consumption is forecast to be 2.1 percent above year-earlier levels during the first half of 1983. The price of gasoline is projected to average $1.35 per gallon during 1982 then rise to $1.39 per gallon in the second quarter of 1983.

Table 1. Summary of Base Case Petroleum Projections

	Million Barrels per Day (percent change from prior year)				
	History		Forecast (full year)	Forecast (first half)	
Forecast Variable	1980	1981	1982	1982	1983
Petroleum Consumption					
Motor Gasoline	6.86	6.59	6.69	6.58	6.72
	(-6.5)	(-3.9)	(1.5)	(0.7)	(2.1)
Distillate Fuel Oil	2.97	2.83	2.90	3.01	3.20
	(-10.3)	(-4.7)	(2.5)	(1.0)	(6.3)
Residual Fuel Oil	2.56	2.06	1.87	1.94	2.26
	(-9.5)	(-19.5)	(-9.2)	(-11.2)	(16.5)
Total Petroleum[a]	17.04	16.02	15.96	15.92	16.75
	(-7.7)	(-6.0)	(-0.4)	(-2.1)	(5.2)
Total Imports (Including SPR*)	6.91	5.99	5.98	5.85	7.09
	(-19.2)	(-13.3)	(-0.2)	(-2.3)	(21.2)
Crude Oil Production	8.60	8.56	8.48	8.52	8.40
	(0.6)	(-0.5)	(-0.9)	(-0.5)	(-1.4)
	Billion 1972 Dollars (Percent Change From Prior Year)				
Forecast Assumptions					
Gross National Product	1,481	1,510	1,499	1,486	1,551
	(-0.2)	(2.0)	(-0.7)	(-1.3)	(4.4)
	Nominal Dollars per Barrel (Percent Change From Prior Year)				
Average Cost of Imported Crude Oil	33.89	37.06	35.41	35.41	36.22
	(57.7)	(9.4)	(-4.5)	(-7.4)	(2.3)

*SPR = Strategic Petroleum Reserve

[a] Total product supplied including "other" petroleum products.

Fuel Oils

The consumption of distillate fuel oil is forecast to rise by 2.5 percent to 2.9 million barrels per day in 1982, then rise to 3.2 million barrels per day, 6 percent above year-earlier levels, in the first half of 1983. Retail heating oil prices are projected to vary from an average of $1.23 per gallon in the first quarter of 1982 to $1.28 per gallon in the second quarter of 1983. Residual fuel oil consumption in the base case is projected to decrease by 9 percent during 1982, to 1.9 million barrels per day, then rise to 2.3 million barrels per day in the first half of 1983. The average price for residual oil in the base case projection is about $31.90 per barrel in 1982; it then rises to $33.54 per barrel in the second quarter of 1983. The projected 16 percent increase in the amount of residual fuel oil supplied to users between the first halves of 1982 and 1983 is the result of a number of assumptions. These assumptions include a more-than-9 percent increase in industrial activity and a decline in the real price of residual fuel oil between the periods, an increase in electric utilities' oil consumption as generation rises rapidly, and the assumption that utilities maintain relatively high stocks of residual fuel oil.

Natural Gas, Coal, and Other Energy Sources.

Natural gas consumption is projected to rise by 2 percent during 1982 to approximately 20.4 trillion cubic feet (TCF). Domestic production is expected to decrease slightly while imports rise to 0.9 TCF. Between the first halves of 1982 and 1983, domestic consumption of natural gas is projected to rise by almost 4 percent, with most of the additional gas provided by withdrawals from underground storage.

Between 1980 and 1981, U.S. coal production fell by 22 million tons, to 808 million tons, and domestic consumption rose by 28 million tons, to over 730 million tons. In spite of the decline in production because of the miners' strike, coal exports during 1981 rose by 23 percent to set a new record of 113 million tons. Coal production is projected to resume its rise in 1982, reaching approximately 887 million tons, and be 5 percent above year-earlier levels in the first half of 1983. Coal production, consumption, and exports are all projected to rise by 4 to 5 percent, to new record levels, in 1982.

From 1980 to 1981, electricity generation rose by 0.3 percent to approximately 2,293 billion kilowatt hours. A rise of 1.6 percent, to 2,329 billion kilowatt hours, is projected for 1982. A 5 percent rise between the first half of 1982 and the first half of the 1983 period is projected. In 1981, the shares of total electricity generated by major energy sources were: coal, 52 percent; natural gas, 15 percent; nuclear power, 12 percent; hydroelectricity, 11 percent; and oil, 9 percent. The use of coal for electricity generation is projected to rise by more than 5 percent in 1982, reaching over 54 percent of total generation. During 1982, nuclear-powered generation is projected to rise by 15 percent. If this forecast is realized, nuclear energy will displace natural gas as the second most important electric utility fuel.

Total Energy

Total energy use is projected to rise by 1.5 percent in 1982. (The total energy use figures reported and forecast here exclude almost all fuelwood use.) The share of petroleum is projected to continue to decline, while the shares of total energy use accounted for by electric utilities' coal and nuclear power consumption continue to rise. The country's dependence on net energy imports is projected to fall from 13 percent of gross energy consumption in 1981 to 12 percent in 1982 as oil imports stabilize, coal exports increase, and gas imports rise slightly. Dependence on imported energy increases in the economic rebound that is assumed to continue into 1983.

Table 2. Macroeconomic, Price, and Weather Data Assumptions for Cases 1, 2 and 3

	History								Projections						
	1979	1980	1981						1982					1983	
	Year	Year	1st	2nd	3rd	4th	Year	Case	1st	2nd	3rd	4th	Year	1st	2nd
						(billion of 1972 dollars)									
Macroeconomic Assumptions[a]															
Real Gross National Product	1483	1481	1516	1510	1516	1496	1510	1	1486	1487	1506	1524	1501	1542	1559
								2	1485	1486	1504	1521	1499	1537	1553
								3	1485	1485	1502	1517	1497	1530	1543
						(percent)									
Percent Change from Prior Year	3.3	-0.2	1.0	3.3	3.0	0.7	2.0	1	-2.0	-1.6	-0.6	1.9	-0.6	3.8	4.9
								2	-2.0	-1.6	-0.8	1.7	-0.7	3.5	4.5
								3	-2.1	-1.7	-0.9	1.4	-0.8	3.0	3.9
GNP Implicit Price Deflator (Index, 1972 = 100)	162.8	177.4	188.1	191.1	195.6	199.6	193.6	1	202.8	206.1	209.6	214.1	208.2	218.0	221.7
								2	202.8	206.2	209.6	214.3	208.2	218.4	222.4
								3	202.9	206.3	209.6	214.4	208.2	218.9	223.3
						(percent)									
Percent Change from Prior Year	8.5	9.0	9.9	9.0	9.2	7.9	9.1	1	7.8	7.9	7.2	7.3	7.5	7.5	7.5
								2	7.8	7.9	7.2	7.4	7.5	7.7	7.9
								3	7.8	8.0	7.2	7.4	7.5	7.9	8.3
Real Disposable[b] Personal Income	1,012	1,018	1,033	1,037	1,044	1,047	1,040	1	1048	1049	1077	1089	1066	1098	1105
								2	1048	1048	1075	1087	1065	1095	1101
								3	1047	1047	1074	1084	1063	1091	1095
Percent Change from Prior Year	3.1	0.7	1.2	2.8	2.5	2.1	2.1	1	1.4	1.2	3.2	4.0	2.5	4.8	5.3
								2	1.4	1.1	3.0	3.8	2.3	4.5	5.0
								3	1.4	1.0	2.9	3.5	2.2	4.1	4.5
Index of Industrial Production (MFG) (Index, 1967=100)	153.6	146.7	151.3	152.4	153.5	145.0	150.3	1	141.9	142.9	147.1	151.3	145.8	155.2	158.2
								2	141.9	142.9	146.8	150.7	145.6	154.2	156.8
								3	141.9	142.8	146.5	150.0	145.3	152.9	154.9
Oil Price Assumptions															
					(U.S. nominal dollars/barrel)										
Imported Crude Oil[c] Prices	21.67	33.89	38.72	37.76	35.98	35.80	37.06	1	35.07	34.05	33.07	32.11	33.58	32.01	32.33
								2	35.41	35.41	35.41	35.41	35.41	35.87	36.57
								3	35.76	36.90	38.12	39.62	37.61	41.66	43.95
					(U.S. nominal dollars/barrel)										
U.S. Refiners' Cost[d]	17.66	28.22	36.54	35.91	34.42	34.30	35.29	1	33.80	32.86	31.91	31.04	32.40	31.15	31.48
								2	34.13	34.17	34.17	34.23	34.18	34.91	35.62
								3	34.47	35.61	36.79	38.30	36.29	40.54	42.81
						(number of degree days)									
Weather Assumptions[e]															
Heating Degree Days	4928	4057	2364	464	98	1736	4662		2390	539	88	1669	4694	2390	539
Cooling Degree Days	1074	1281	17	365	727	54	1163		28	327	755	63	1173	28	327

[a] Macroeconomic projections derived from three DRI model forecasts. Modifications to the world oil price and Windfall Profit Tax receipt, appropriate to the three cases, were made in the DRI forecast CONTROL 021582 to generate these projections

[b] Data at seasonally adjusted annual rates.

[c] Cost of imported crude oil to U.S. refiners.

[d] U.S. refiners' acquisition costs of foreign and domestic crude oil

[e] Degree day data, weighted by population, reflecting revisions by Department of Commerce, National Oceanic and Atmospheric Administrartion, Dec., 1981

Sources: (1) U.S. Department of Energy, Energy Information Administration, and (2) Data Resources, Inc., Model of U.S. Economy, 1980c edition, CONTROL U21582, as modified by EIA.

Table 3. Short-Term Energy Prices (Nominal), History and Projections, 1980-1983 (2nd quarter)

	History							Projections						
	1980	1981						1982					1983	
Product	Annual	1st	2nd	3rd	4th	Annual		1st	2nd	3rd	4th	Annual	1st	2nd
Petroleum														
Gasoline¹ (Cents per Gallon)	122.1	133.7	137.1	135.3	135.1	135.3	Case-1	132.2	130.8	130.6	127.2	130.2	124.4	126.0
							Case-2	133.2	134.5	137.4	136.5	135.4	135.6	139.5
							Case-3	134.6	139.4	146.6	149.6	142.6	152.7	160.9
No. 2 Heating Oil (Wholesale) (Cents per Gallon)	80.8	99.7	98.4	96.1	96.9	97.8	Case-1	95.8	93.0	90.6	88.5	91.8	89.4	89.9
							Case-2	96.9	96.6	96.2	97.1	96.7	99.6	101.1
							Case-3	98.6	101.8	105.4	110.2	103.9	117.4	123.4
No. 2 Heating Oil (Retail) (Cents per Gallon)	97.8	131.1	122.6	120.0	120.7	121.1	Case-1	121.5	117.6	113.6	113.0	116.5	114.9	115.0
							Case-2	123.1	122.2	121.0	123.2	122.4	127.2	128.4
							Case-3	126.3	130.4	134.3	142.2	133.3	152.5	159.4
No. 6 Residual Fuel Oil² (Dollars per Barrel)	26.09	35.27	33.28	30.87	30.41	32.36	Case-1	29.86	30.47	31.39	30.30	30.50	29.19	30.40
							Case-2	30.22	31.51	33.13	32.73	31.90	32.07	33.58
							Case-3	31.10	33.25	35.79	36.50	34.16	37.08	39.78
Kerosene-Based Jet Fuel (Cents per Gallon)	87.5	101.2	105.8	103.5	103.2	103.4	Case-1	100.1	98.0	96.0	94.1	97.0	93.8	94.0
							Case-2	103.9	104.7	105.7	106.7	105.2	108.7	111.4
							Case-3	113.7	118.7	123.6	128.8	121.2	135.5	142.0
Other														
Coal (Delivered to Utilities) (Cents per Million Btu)	135.2	145.5	148.8	156.9	157.6	152.3	Case-1	150.7	154.3	157.5	161.0	155.8	164.5	168.2
							Case-2	158.6	162.1	165.7	169.4	164.0	173.2	177.0
							Case-3	166.5	170.2	174.0	177.9	172.2	181.8	185.9
Natural Gas (Residential) (Cents per 1000 Cu. Ft.)	391.5	411.2	445.6	471.1	496.0	456.0	Case-1	493.3	517.2	544.9	569.9	531.3	598.2	622.2
							Case-2	519.3	544.5	573.5	599.9	559.3	629.7	655.0
							Case-3	545.2	571.7	602.2	629.9	587.3	661.2	687.7
Natural Gas (Delivered to Utilities) (Cents per Million Btu)	212.4	259.5	280.0	289.1	309.0	284.6	Case-1	292.9	313.9	330.0	345.1	322.5	364.7	379.7
							Case-2	308.3	330.5	355.0	363.3	339.5	383.9	399.6
							Case-3	323.7	347.0	373.6	381.4	356.4	403.1	419.6
Electricity (Residential) (Cents per Kilowatt Hour)	5.36	5.57	6.25	6.61	6.47	6.23	Case-1	6.21	6.61	6.92	6.60	6.58	6.41	6.66
							Case-2	6.41	6.91	7.30	6.99	6.90	6.82	7.32
							Case-3	6.62	7.29	7.70	7.43	7.25	7.38	7.88

[1] Average for all grades and services.

Note: The Bureau of Labor Statistics has changed the methodology used to calculate average gasoline prices as of September 1981. See Short-Term Energy Outlook, Volume II, November 1981

[2] Retail residual fuel oil--average, all sulfur contents.

Note: Historical data are derived from monthly data reported in the Monthly Energy Review, January 1982, and from the Monthly Petroleum Product Price Report, December 1981.

Table 6. Quarterly Supply and Disposition of Petroleum : Base Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Production													
Crude Oil	8.60	8.58	8.55	8.54	8.58	8.56	8.54	8.50	8.46	8.42	8.48	8.41	8.39
North Slope	1.52	1.52	1.52	1.52	1.50	1.52	1.60	1.60	1.60	1.60	1.60	1.61	1.61
Subarctic[1]	7.08	7.05	7.03	7.02	7.08	7.04	6.94	6.90	6.86	6.82	6.88	6.80	6.78
Natural Gas Liquids	1.53	1.60	1.56	1.59	1.61	1.59	1.58	1.56	1.55	1.58	1.57	1.57	1.56
Other Domestic	0.04	0.04	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Processing Gain	0.64	0.53	0.48	0.47	0.54	0.50	0.50	0.50	0.51	0.51	0.51	0.52	0.53
Total Production	10.81	10.74	10.65	10.65	10.78	10.70	10.67	10.61	10.57	10.57	10.61	10.55	10.53
Imports (including SPR)													
Crude Oil	5.26	4.80	4.37	4.41	4.19	4.44	4.38	4.23	4.40	4.73	4.44	5.11	5.25
Refined Products	1.65	1.73	1.34	1.53	1.60	1.55	1.71	1.35	1.37	1.73	1.54	2.14	1.67
Total Imports	6.91	6.53	5.71	5.94	5.79	5.99	6.10	5.59	5.78	6.46	5.98	7.25	6.92
Exports													
Crude Oil	0.29	0.25	0.21	0.22	0.23	0.23	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Refined Products	0.24	0.32	0.32	0.36	0.47	0.37	0.43	0.45	0.47	0.46	0.45	0.49	0.50
Total Exports	0.54	0.57	0.53	0.58	0.70	0.59	0.68	0.70	0.72	0.71	0.70	0.74	0.75
Net Imports (incl. SPR)	6.37	5.96	5.18	5.36	5.10	5.40	5.41	4.88	5.06	5.75	5.28	6.51	6.16
Primary Stock Levels[2] (million barrels)													
Opening[3]	1249.5	1307.3	1284.2	1274.0	1280.8	1307.3	1257.1	1177.9	1207.8	1237.3	1257.1	1185.7	1128.0
Closing	1283.9	1284.2	1274.0	1280.8	1257.1	1257.1	1177.9	1207.8	1237.3	1185.7	1185.7	1128.0	1173.7
Net Withdrawals (million barrels per day)	-0.09	0.25	0.11	-0.07	0.26	0.14	0.88	-0.33	-0.32	0.56	0.20	0.63	-0.49
SPR Fill Rate Additions(-) (million barrels per day)	-0.05	-0.15	-0.46	-0.39	-0.34	-0.34	-0.21	-0.05	-0.05	-0.14	-0.12	-0.17	-0.23
Total Primary Supply	17.04	16.80	15.47	15.54	15.79	15.91	16.72	15.12	15.26	16.75	15.96	17.52	15.97
Product Supplied													
Motor Gasoline	6.58	6.33	6.73	6.71	6.57	6.59	6.39	6.76	6.81	6.79	6.69	6.52	6.91
Distillate Fuel Oil	2.87	3.46	2.46	2.43	2.98	2.83	3.42	2.59	2.38	3.22	2.90	3.63	2.77
Residual Fuel Oil	2.50	2.50	1.86	1.91	1.98	2.06	2.28	1.59	1.62	1.99	1.87	2.50	1.93
Other Products	5.09	5.12	4.69	4.77	4.76	4.83	4.95	4.49	4.76	5.06	4.81	5.18	4.68
Total Reclassified[3]	-0.00	-0.40	-0.25	-0.25	-0.29	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31
Total Product Supplied	17.04	17.02	15.49	15.57	15.99	16.02	16.72	15.12	15.26	16.75	15.96	17.52	15.97
Discrepancy	-0.00	-0.22	-0.02	-0.03	-0.20	-0.11	0.00	0.00	0.00	-0.00	-0.00	-0.01	0.00
Total Disposition	17.04	16.80	15.47	15.54	15.79	15.91	16.72	15.12	15.26	16.75	15.96	17.52	15.97

SPR = Strategic Petroleum Reserve.
[1]Lower-48 states and southern Alaska.
[2]Excludes crude oil for the Strategic Petroleum Reserve (SPR).
[3]Stocks data are revised to the new reporting basis for major refined products and to include Alaskan crude oil in transit, by water, starting in 1981.
Note: Historical data are derived from monthly data reported in the *Monthly Petroleum Statement*.

Table 5. Quarterly Supply and Disposition of Petroleum: Low Price Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Production													
Crude Oil	8.60	8.58	8.55	8.54	8.58	8.56	8.58	8.50	8.46	8.42	8.48	8.41	8.39
North Slope	1.52	1.52	1.52	1.52	1.50	1.52	1.60	1.60	1.60	1.60	1.60	1.61	1.61
Subarctic[1]	7.08	7.05	7.03	7.02	7.08	7.04	6.98	6.90	6.86	6.82	6.88	6.80	6.78
Natural Gas Liquids	1.57	1.60	1.56	1.59	1.61	1.59	1.53	1.56	1.55	1.58	1.57	1.57	1.56
Other Domestic	0.04	0.04	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Processing Gain	0.60	0.53	0.48	0.47	0.54	0.50	0.51	0.51	0.52	0.52	0.51	0.53	0.54
Total Production	10.81	10.74	10.65	10.65	10.78	10.70	10.67	10.62	10.58	10.58	10.61	10.56	10.54
Imports (including SPR)													
Crude Oil	5.26	4.80	4.37	4.41	4.19	4.44	4.41	4.30	4.52	4.95	4.55	5.40	5.53
Refined Products	1.65	1.73	1.34	1.53	1.60	1.55	1.74	1.41	1.45	1.84	1.61	2.27	1.80
Total Imports	6.91	6.53	5.71	5.94	5.79	5.99	6.16	5.71	5.97	6.79	6.16	7.67	7.32
Exports													
Crude Oil	0.29	0.25	0.21	0.22	0.23	0.23	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Refined Products	0.26	0.32	0.32	0.36	0.47	0.37	0.43	0.45	0.47	0.46	0.45	0.49	0.50
Total Exports	0.54	0.57	0.53	0.58	0.70	0.59	0.68	0.70	0.72	0.71	0.70	0.74	0.75
Net Imports (incl. SPR)	6.37	5.96	5.18	5.36	5.10	5.40	5.47	5.00	5.25	6.08	5.45	6.93	6.57
Primary Stock Levels[2] (million barrels)													
Opening[3]	1249.5	1307.3	1284.2	1274.4	1280.8	1307.3	1257.1	1178.0	1208.2	1238.1	1257.1	1187.4	1131.7
Closing	1283.9	1284.2	1274.4	1280.8	1257.1	1257.1	1178.0	1208.2	1238.1	1187.4	1187.4	1131.7	1177.5
Net Withdrawals (million barrels per day)	-0.09	0.25	0.11	-0.07	0.26	0.14	0.88	-0.33	-0.32	0.55	0.19	0.62	-0.50
SPR Fill Rate Additions(-) (million barrels per day)	-0.05	-0.15	-0.46	-0.39	-0.34	-0.34	-0.24	-0.05	-0.05	-0.14	-0.12	-0.17	-0.23
Total Primary Supply	17.04	16.80	15.47	15.54	15.79	15.91	16.78	15.24	15.46	17.07	16.14	17.94	16.38
Product Supplied													
Motor Gasoline	6.86	6.33	6.73	6.71	6.57	6.59	6.39	6.79	6.87	6.88	6.73	6.63	7.05
Distillate Fuel Oil	2.97	3.46	2.46	2.43	2.98	2.83	3.44	2.61	2.42	3.32	2.95	3.78	2.85
Residual Fuel Oil	2.56	2.58	1.86	1.91	1.98	2.06	2.31	1.66	1.72	2.11	1.95	2.73	2.08
Other Products	5.09	5.12	4.69	4.77	4.76	4.83	4.95	4.49	4.77	5.08	4.82	5.13	4.72
Total Reclassified[3]	-0.44	-0.48	-0.25	-0.25	-0.29	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31
Total Product Supplied	17.10	17.02	15.49	15.57	15.99	16.02	16.78	15.24	15.46	17.07	16.14	17.95	16.38
Discrepancy	-0.06	-0.22	-0.02	-0.03	-0.20	-0.11	0.00	0.00	0.00	-0.00	-0.00	-0.01	0.00
Total Disposition	17.04	16.80	15.47	15.54	15.79	15.91	16.78	15.24	15.46	17.07	16.14	17.94	16.38

SPR = Strategic Petroleum Reserve.

[1] Lower-48 states and southern Alaska.

[2] Excludes crude oil for the Strategic Petroleum Reserve (SPR).

[3] Stocks data are revised to the new reporting basis for major refined products and to include Alaskan crude oil in transit, by water, starting in 1981.

Note: Historical data are derived from monthly data reported in the Monthly

Table 6. Quarterly Supply and Disposition of Petroleum: High Price Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Production													
Crude Oil	8.60	8.57	8.55	8.54	8.58	8.56	8.54	8.50	8.46	8.42	8.48	8.41	8.39
North Slope	1.52	1.52	1.52	1.52	1.50	1.52	1.60	1.60	1.60	1.60	1.60	1.61	1.61
Subarctic[1]	7.08	7.05	7.03	7.02	7.08	7.04	6.94	6.90	6.86	6.82	6.88	6.80	6.78
Natural Gas Liquids	1.57	1.60	1.56	1.59	1.61	1.59	1.58	1.56	1.55	1.58	1.57	1.57	1.56
Other Domestic	0.04	0.04	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Processing Gain	0.60	0.53	0.48	0.47	0.54	0.50	0.50	0.50	0.51	0.50	0.50	0.50	0.51
Total Production	10.81	10.74	10.65	10.65	10.78	10.70	10.66	10.61	10.57	10.56	10.60	10.53	10.51
Imports (including SPR)													
Crude Oil	5.26	4.80	4.37	4.41	4.19	4.40	4.33	4.14	4.25	4.41	4.28	4.64	4.82
Refined Products	1.65	1.73	1.34	1.53	1.60	1.59	1.68	1.29	1.28	1.60	1.46	1.96	1.49
Total Imports	6.91	6.53	5.71	5.94	5.79	5.99	6.01	5.43	5.53	6.01	5.74	6.60	6.31
Exports													
Crude Oil	0.28	0.25	0.21	0.22	0.23	0.23	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Refined Products	0.26	0.32	0.32	0.36	0.47	0.37	0.43	0.45	0.47	0.46	0.45	0.49	0.50
Total Exports	0.54	0.57	0.53	0.58	0.70	0.59	0.68	0.70	0.72	0.71	0.70	0.74	0.75
Net Imports (incl. SPR)	6.37	5.96	5.18	5.36	5.10	5.40	5.33	4.73	4.80	5.30	5.04	5.86	5.56
Primary Stock Levels[2] (million barrels)													
Opening[3]	1249.5	1307.3	1284.2	1274.6	1280.8	1307.3	1257.1	1177.7	1207.3	1236.1	1257.1	1183.4	1125.1
Closing	1283.9	1284.2	1274.6	1280.8	1257.1	1257.1	1177.7	1207.3	1236.1	1183.4	1183.4	1125.1	1168.3
Net Withdrawals (million barrels per day)	-0.09	0.25	0.11	-0.07	0.26	0.14	0.88	-0.32	-0.31	0.57	0.20	0.65	-0.48
SPR Fill Rate Additions(-) (million barrels per day)	-0.05	-0.15	-0.46	-0.39	-0.34	-0.34	-0.24	-0.05	-0.05	-0.14	-0.12	-0.17	-0.23
Total Primary Supply	17.04	16.80	15.47	15.54	15.79	15.91	16.63	14.97	15.01	16.29	15.72	16.86	15.36
Product Supplied													
Motor Gasoline	6.86	6.33	6.73	6.71	6.57	6.59	6.38	6.73	6.74	6.68	6.63	6.30	6.71
Distillate Fuel Oil	2.97	3.46	2.46	2.43	2.98	2.83	3.38	2.55	2.32	3.03	2.82	3.32	2.62
Residual Fuel Oil	2.56	2.56	1.86	1.91	1.98	2.06	2.24	1.51	1.51	1.85	1.78	2.48	1.72
Other Products	5.09	5.12	4.69	4.77	4.76	4.83	4.95	4.49	4.75	5.04	4.81	5.08	4.62
Total Reclassified[4]	-0.44	-0.40	-0.25	-0.25	-0.29	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31
Total Product Supplied	17.04	17.02	15.49	15.57	15.99	16.02	16.63	14.97	15.01	16.29	15.72	16.87	15.36
Discrepancy	-0.00	-0.22	-0.02	-0.03	-0.20	-0.11	0.00	0.00	0.00	-0.00	-0.00	-0.01	0.00
Total Disposition	17.04	16.80	15.47	15.54	15.79	15.91	16.63	14.97	15.01	16.29	15.72	16.86	15.36

SPR = Strategic Petroleum Reserve.

[1] Lower-48 states and southern Alaska.

[2] Includes crude oil for the Strategic Petroleum Reserve (SPR).

[3] Stocks data are revised to the new reporting basis for major refined products and to include Alaskan crude oil in transit, by water, starting in 1981.

Note: Historical data are derived from monthly data reported in the Monthly Petroleum Statement.

Table 7. Quarterly Supply and Disposition of Motor Gasoline : Base Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Domestic Production[a]............	6.75	6.40	6.15	6.53	6.55	6.41	6.36	6.43	6.51	6.67	6.49	6.42	6.55
Imports..........................	0.14	0.14	0.16	0.14	0.16	0.15	0.14	0.17	0.16	0.17	0.16	0.17	0.20
Exports..........................	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Imports......................	0.14	0.14	0.16	0.14	0.16	0.15	0.14	0.17	0.16	0.16	0.16	0.17	0.20
Primary Stocks of Finished Motor Gasoline[b] (million barrels)													
Opening..........................	200.34	213.55	232.[illegible]	194.23	190.58	213.55	203.06	213.05	197.56	184.32	203.06	188.26	194.11
Closing..........................	213.55	232.38	19[illegible]	190.58	203.06	203.06	213.05	197.56	184.32	188.26	188.26	194.11	180.25
Net Withdrawals (million barrels per day)	-0.04	-0.21	0.42	0.04	-0.14	0.03	-0.11	0.17	0.14	-0.04	0.04	-0.07	0.15
Total Primary Supply..............	6.86	6.33	6.73	6.71	6.57	6.59	6.39	6.76	6.81	6.79	6.69	6.52	6.91
Disposition													
Leaded...........................	3.79	3.23	3.46	3.34	3.27	3.33	2.98	3.07	3.02	2.91	3.00	2.71	2.78
Unleaded.........................	3.07	3.10	3.27	3.36	3.30	3.26	3.41	3.69	3.79	3.88	3.69	3.81	4.13
Total Product Supplied...........	6.86	6.33	6.73	6.71	6.57	6.59	6.39	6.76	6.81	6.79	6.69	6.52	6.91
Discrepancy......................	-0.00	0.00	-0.00	0.00	0.00	0.00	0.0	-0.00	-0.00	0.0	-0.00	0.0	0.0
Total Disposition................	6.86	6.33	6.73	6.71	6.57	6.59	6.39	6.76	6.81	6.79	6.69	6.52	6.91

[a] Refinery production plus production at natural gas processing plants.

[b] Includes stocks at natural gas processing plants. Excludes stocks of Unclassified Motor Gasoline Blending Components.

[c] Includes an estimate for Unclassified Products in 1980.

Note: Historical data are derived from monthly data reported in the *Monthly Petroleum Statement*.

Table 8. Quarterly Supply and Disposition of Distillate Fuel Oil : Base Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Refinery Output	2.76	2.76	2.46	2.56	2.69	2.62	2.64	2.72	2.82	2.72	2.73	2.69	2.85
Imports	0.14	0.25	0.16	0.16	0.11	0.17	0.22	0.13	0.16	0.19	0.17	0.26	0.16
Exports	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Net Imports	0.14	0.24	0.16	0.15	0.10	0.16	0.21	0.13	0.15	0.19	0.17	0.26	0.15
Primary Stock Levels (million barrels)													
Opening	228.71	205.13	164.66	180.19	206.70	205.13	190.10	139.13	160.31	217.54	190.10	189.15	127.96
Closing	205.13	164.66	180.19	206.70	190.10	190.10	139.13	160.31	217.54	189.15	189.15	127.96	148.96
Net Withdrawals (million barrels per day)	0.06	0.45	-0.17	-0.29	0.18	0.04	0.57	-0.27	-0.59	0.31	0.00	0.68	-0.23
Total Primary Supply	2.97	3.45	2.45	2.42	2.97	2.82	3.42	2.59	2.38	3.22	2.90	3.63	2.77
Product Supplied													
Nonutility Shipments[a]	2.89	3.39	2.39	2.38	2.93	2.77	3.30	2.50	2.29	3.14	2.80	3.53	2.72
Electric Utility Shipments	0.08	0.07	0.06	0.05	0.05	0.06	0.12	0.09	0.10	0.08	0.09	0.09	0.06
Total Product Supplied[a]	2.97	3.46	2.46	2.43	2.98	2.83	3.42	2.59	2.38	3.22	2.90	3.63	2.77
Electric Utility Consumption	0.08	0.08	0.06	0.06	0.05	0.06	0.12	0.07	0.09	0.08	0.09	0.10	0.05
Electric Utility Stock Levels (million barrels)													
Opening	23.23	21.30	20.49	20.95	19.64	21.30	18.93	18.77	20.39	20.76	18.93	20.51	19.64
Closing	21.30	20.49	20.95	19.64	18.93	18.93	18.77	20.39	20.76	20.51	20.51	19.64	20.40
Net Additions (million barrels per day)	-0.01	-0.01	0.01	-0.01	-0.01	-0.01	-0.00	0.02	0.00	-0.00	0.00	-0.01	0.01
Electric Utility Discrepancy	0.00	-0.00	0.00	-0.01	-0.01	-0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00
Discrepancy	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
Total Disposition	2.97	3.45	2.45	2.42	2.97	2.82	3.42	2.59	2.38	3.22	2.90	3.63	2.77

[a] Includes an estimate for unfinished oils in 1980.

Note: Historical data are derived from monthly data reported in the Monthly Petroleum Statement, and the Cost and Quality of Fuels for Electric Utility Plants, monthly issues.

Table 9. Quarterly Supply and Disposition of Residual Fuel Oil : Base Case
(Million Barrels per Day, Except Stocks)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Refinery Output	1.63	1.53	1.26	1.23	1.25	1.32	1.49	1.25	1.19	1.31	1.31	1.53	1.35
Imports	0.94	0.89	0.62	0.83	0.85	0.80	0.88	0.65	0.65	0.86	0.76	1.17	0.86
Exports	0.03	0.11	0.08	0.09	0.19	0.12	0.19	0.19	0.21	0.21	0.20	0.23	0.23
Net Imports	0.91	0.78	0.54	0.74	0.66	0.68	0.69	0.46	0.44	0.65	0.56	0.94	0.63
Primary Stock Levels (million barrels)													
Opening	95.68	91.79	74.92	70.06	80.04	91.79	78.35	70.17	81.10	81.63	78.35	78.02	69.10
Closing	91.79	74.92	70.06	80.04	78.35	78.35	70.17	81.10	81.63	78.02	78.02	69.10	73.91
Net Withdrawals (million barrels per day)	0.01	0.19	0.05	-0.11	0.02	0.04	0.09	-0.12	-0.01	0.03	-0.00	0.11	-0.05
Total Primary Supply	2.55	2.50	1.85	1.86	1.93	2.03	2.28	1.59	1.62	1.99	1.87	2.58	1.93
Product Supplied													
Nonutility Shipments¹	1.52	1.51	1.03	1.05	1.17	1.19	1.45	1.05	0.98	1.36	1.21	1.55	1.17
Electric Utility Shipments	1.04	1.00	0.84	0.85	0.81	0.87	0.82	0.54	0.64	0.63	0.66	1.03	0.76
Total Product Supplied¹	2.56	2.50	1.86	1.91	1.98	2.06	2.28	1.59	1.62	1.99	1.87	2.58	1.93
Electric Utility Consumption	1.06	1.06	0.85	0.89	0.91	0.93	0.86	0.54	0.70	0.71	0.70	0.92	0.67
Electric Utility Stock Levels (million barrels)													
Opening	107.64	113.49	107.57	105.85	109.16	113.49	100.06	97.00	97.00	92.00	100.06	85.50	95.60
Closing	113.49	107.57	105.85	109.16	100.06	100.06	97.00	97.00	92.00	85.50	85.50	95.60	100.00
Net Additions (million barrels per day)	0.02	-0.07	-0.02	0.04	-0.10	-0.04	-0.03	0.0	-0.05	-0.07	-0.04	0.11	0.09
Electric Utility Discrepancy	0.03	-0.00	-0.01	0.07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
Discrepancy	-0.01	-0.01	-0.01	-0.05	-0.05	-0.03	-0.00	-0.00	-0.00	0.0	-0.00	-0.00	-0.00
Total Disposition	2.55	2.50	1.85	1.86	1.93	2.03	2.28	1.59	1.62	1.99	1.87	2.58	1.93

¹Includes an estimate for unfinished oils in 1980.

Note: Historical data are derived from monthly data reported in the *Monthly Petroleum Statement*, and the *Cost and Quality of Fuels for Electric Utility Plants*, monthly issues.

Table 1C. Quarterly Supply and Disposition of Natural Gas
(Trillion Cubic Feet)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Marketed Production of Dry Gas..	19.35	4.90	4.86	4.88	4.91	19.55	4.92	4.77	4.74	4.94	19.38	4.88	4.75
Net Imports of Dry Gas..........	0.89	0.23	0.18	0.18	0.25	0.84	0.25	0.21	0.20	0.24	0.92	0.25	0.21
Net Imports of LNG..............	0.04	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00
SNG Production..................	0.12	0.05	0.03	0.02	0.03	0.12	0.04	0.03	0.02	0.02	0.11	0.04	0.03
Total New Supply................	20.41	5.18	5.07	5.08	5.18	20.51	5.21	5.02	4.96	5.22	20.41	5.18	5.00
Underground Storage													
Opening.........................	6.30	6.27	5.25	5.90	6.87	6.27	6.55	5.53	6.08	7.10	6.55	6.60	5.34
Closing.........................	6.27	5.25	5.90	6.87	6.55	6.55	5.53	6.08	7.10	6.60	6.60	5.34	5.65
Net Withdrawals.................	0.03	1.02	-0.65	-0.97	0.31	-0.28	1.02	-0.54	-1.03	0.51	-0.04	1.25	-0.31
Total Primary Supply............	20.43	6.20	4.42	4.10	5.50	20.23	6.23	4.47	3.94	5.72	20.36	6.43	4.69
Consumption													
Electric Utilities..............	3.68	0.73	0.99	1.13	0.77	3.61	0.67	0.83	1.02	0.75	3.27	0.72	0.90
Refinery Fuel...................	0.83	0.28	0.19	0.20	0.20	0.79	0.18	0.18	0.18	0.19	0.73	0.18	0.19
All Other Uses[1]	15.69	5.10	3.15	2.75	4.43	15.52	5.38	3.46	2.73	4.79	16.37	5.52	3.60
Subtotal........................	20.20	6.11	4.33	4.07	5.40	19.92	6.23	4.47	3.94	5.72	20.36	6.43	4.69
Discrepancy.....................	0.24	0.09	0.09	0.03	0.09	0.31	0.00	0.00	0.0	0.00	0.00	0.00	0.00
Total Disposition...............	20.43	6.20	4.42	4.10	5.50	20.23	6.23	4.47	3.94	5.72	20.36	6.43	4.69

LNG=Liquefied Natural Gas.
SNG=Synthetic Natural Gas.
[1] Includes residential, commercial, and industrial uses plus use of synthetic natural gas.
Note: Historical data are derived from monthly data reported in the Monthly Energy Review, January 1982, and other EIA publications. Net import data for 1981 are extracted from FPC Form 14.

Table 11. Quarterly Supply and Disposition of Coal
(Million Short Tons)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Production	829.70	213.89	137.23	232.89	223.66	807.70	211.26	218.30	223.59	233.63	886.78	223.44	227.81
Imports	1.19	0.22	0.30	0.23	0.25	1.00	0.16	0.28	0.20	0.22	0.86	0.08	0.20
Exports	91.74	22.20	20.51	33.98	35.77	112.50	25.39	30.56	30.39	30.30	116.64	25.49	30.64
Total New Domestic Supply	739.15	191.91	117.01	199.14	188.14	696.20	186.03	188.01	193.40	203.55	770.99	198.03	197.38
Secondary Stock Levels[1]													
Opening	181.65	204.03	206.85	157.77	164.22	204.03	182.31	177.12	193.09	185.89	182.31	194.97	192.66
Closing	204.03	206.85	157.77	164.22	182.31	182.31	177.12	193.09	185.89	194.97	194.97	192.66	206.68
Net Withdrawals	-22.38	-2.82	49.08	-6.45	-18.08	21.72	5.19	-15.97	7.20	-9.09	-12.67	2.32	-14.02
Total Indicated Consumption	716.77	189.09	166.09	192.69	170.06	717.93	191.22	172.04	200.60	194.46	758.32	200.35	183.36
Domestic Consumption													
Coke Plants	66.66	16.17	13.59	16.19	15.89	61.84	15.81	14.73	14.72	15.50	60.76	16.85	16.32
Electric Utilities	569.27	150.67	138.66	158.96	147.94	596.23	156.35	140.79	170.17	159.26	626.56	164.49	150.54
Retail and General Industry	66.80	19.89	16.07	16.69	19.60	72.25	19.07	16.51	15.73	19.68	70.99	19.01	16.46
Total Domestic Consumption	702.73	186.73	168.32	191.84	183.43	730.32	191.22	172.03	200.61	194.45	758.31	200.35	183.32
Discrepancy	14.03	2.36	-2.23	0.86	-13.38	-12.39	-0.00	0.01	-0.01	0.02	0.01	-0.00	0.04
Total Disposition	716.77	189.09	166.09	192.69	170.06	717.93	191.22	172.04	200.60	194.46	758.32	200.35	183.36

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[1] Secondary stocks are those held by users. Most of the secondary stocks are held by electric utilities. Primary stocks (mine, preparation plant, distribution point) are not accounted for in the projections.

Note: Historical data are derived from monthly data reported in the Monthly Energy Review, January 1982, and other EIA publications.

Table 12. Quarterly Supply and Disposition of Electricity
(Billion Kilowatt Hours)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Generation													
Coal	1161.56	308.28	276.88	318.74	298.50	1202.40	316.04	284.42	343.59	321.38	1265.43	331.75	303.45
Petroleum	245.95	60.13	48.59	51.57	45.83	206.12	50.25	31.68	41.37	41.33	164.55	52.72	37.78
Natural Gas	346.24	69.32	93.11	106.34	76.46	345.23	62.72	77.20	95.14	69.45	304.51	67.46	84.27
Nuclear	251.12	66.57	61.50	74.02	69.34	272.26	79.64	72.51	82.38	70.51	313.04	86.58	76.50
Hydroelectric	276.02	64.06	71.17	64.61	61.02	260.87	71.92	78.83	61.55	82.71	275.01	69.79	74.70
Geothermal and Other	5.50	1.56	1.46	1.50	1.44	6.04	1.52	1.46	3.58	1.59	6.15	1.64	1.58
Total Generation	2286.44	570.33	552.74	617.27	552.60	2292.93	582.09	546.03	625.61	574.97	2328.70	609.94	578.80
Total Net Imports	20.19	4.97	4.50	5.07	4.77	19.79	4.54	4.58	4.61	4.55	18.28	4.54	4.58
T & D Loss[1]	212.23	38.62	60.01	48.07	54.19	201.28	52.39	49.14	58.30	51.75	209.58	54.09	52.09
Total Consumption (Sales)	2094.40	536.68	497.31	574.27	503.18	2111.44	534.24	501.47	573.92	527.78	2137.40	560.39	531.29

[1] Transmission and distribution losses through the power network.

Note: Historical data are derived from monthly data reported in the Monthly Energy Review, January 1982, and other EIA publications.

Table 13. Quarterly Supply and Disposition of Total Energy
(Quadrillion Btu)

	History						Projection						
	1980	1981					1982					1983	
	Total	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	1st	2nd
Supply													
Production													
Petroleum[1]	20.50	5.06	5.09	5.15	5.18	20.48	5.03	5.06	5.09	5.09	20.28	4.96	5.01
Natural Gas[2]	19.75	5.01	4.96	4.98	5.01	19.96	5.02	4.87	4.84	5.04	19.79	4.98	4.85
Coal	18.74	4.83	3.10	5.26	5.05	18.25	4.81	4.97	5.09	5.32	20.19	5.05	5.19
Nuclear	2.70	0.72	0.66	0.80	0.75	2.93	0.86	0.78	0.89	0.85	3.37	0.93	0.81
Hydroelectric[3]	2.88	0.67	0.74	0.67	0.64	2.72	0.75	0.82	0.64	0.65	2.87	0.73	0.78
Geothermal and Other[4]	0.12	0.03	0.03	0.03	0.03	0.13	0.03	0.03	0.03	0.03	0.13	0.08	0.03
Subtotal	64.70	16.32	14.59	16.90	16.66	64.47	16.51	16.54	16.59	16.98	66.63	16.73	16.69
Net Imports													
Crude Oil	10.50	2.38	2.20	2.24	2.12	8.93	2.16	2.11	2.22	2.39	8.88	2.54	2.64
Other Petroleum	2.98	0.73	0.53	0.63	0.60	2.49	0.66	0.46	0.46	0.66	2.25	0.86	0.60
Natural Gas (Dry)	0.93	[illegible]	0.19	0.19	0.26	0.87	0.26	0.22	0.21	0.27	0.96	0.26	0.22
Liquefied Natural Gas	0.04	[illegible]	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00
Coal and Coke	-2.40	-0.60	-0.55	-0.92	-0.97	-3.03	-0.69	-0.82	-0.82	-0.82	-3.15	-0.69	-0.83
Electricity	0.07	0.02	0.02	0.02	0.02	0.07	0.02	0.02	0.02	0.02	0.06	0.02	0.02
Subtotal	12.12	2.76	2.38	2.16	2.02	9.32	2.41	1.98	2.09	2.52	8.99	2.98	2.65
Primary Stocks													
Net Withdrawals	-0.08	1.08	-0.62	-1.01	0.45	-0.10	1.53	-0.76	-1.21	0.84	0.39	1.61	-0.50
SPR Fill Rate Additions(-)	-0.10	-0.08	-0.25	-0.21	-0.18	-0.71	-0.12	-0.03	-0.03	-0.07	-0.25	-0.09	-0.12
Utility Stocks													
Net Withdrawals	-0.52	0.02	0.05	-0.12	-0.32	0.42	0.13	-0.32	0.27	-0.14	-0.07	-0.04	-0.35
Total Supply[8]	76.21	20.11	16.96	17.72	18.63	73.41	20.45	17.41	17.71	20.12	75.69	21.20	18.29
Consumption													
Nonutility Uses													
Petroleum	31.68	7.79	7.17	7.29	7.52	29.77	7.53	6.97	7.04	7.81	29.35	7.88	7.31
Natural Gas[5]	16.74	5.44	3.39	2.99	4.70	16.52	5.64	3.69	2.96	5.07	17.36	5.79	3.84
Coal	3.47	0.87	0.59	0.88	0.90	3.24	0.90	0.84	0.89	0.92	3.55	0.09	0.86
Nonutility Electricity	0.10	0.03	0.03	0.03	0.02	0.10	0.02	0.03	0.02	0.02	0.10	0.02	0.03
Subtotal	51.91	14.13	11.17	11.19	13.14	49.68	14.09	11.52	10.92	13.83	50.35	14.55	12.03
Electricity By Source													
Petroleum	0.88	0.21	0.17	0.18	0.16	0.70	0.17	0.11	0.14	0.14	0.56	0.18	0.13
Natural Gas	1.18	0.24	0.32	0.36	0.26	1.18	0.21	0.26	0.32	0.24	1.04	0.23	0.29
Coal[6]	3.56	1.05	0.94	1.09	1.02	4.10	1.08	0.97	1.17	1.10	4.32	1.13	1.04
Nuclear	0.86	0.23	0.21	0.25	0.24	0.93	0.27	0.25	0.28	0.27	1.07	0.30	0.26
Hydroelectric	0.94	0.22	0.24	0.22	0.21	0.89	0.25	0.27	0.21	0.21	0.94	0.28	0.26
Geothermal and Other	0.02	0.01	0.00	0.01	0.00	0.02	0.01	0.00	0.01	0.01	0.03	0.01	0.01
Subtotal	7.80	1.95	1.89	2.11	1.89	7.82	1.99	1.86	2.13	1.96	7.95	2.08	1.97
Total Net Energy	59.71	16.08	13.06	13.30	15.03	57.46	16.08	13.39	13.05	15.79	58.30	16.63	14.00
Electric Utility Adjustments													
Conversion Loss[7]	16.41	4.07	4.03	4.48	4.01	16.58	4.21	3.95	4.53	4.16	16.85	4.41	4.19
Gross Energy Consumption[8]	76.12	20.14	17.09	17.77	19.04	74.05	20.28	17.34	17.58	19.94	75.15	21.04	18.19
Discrepancy	0.09	-0.04	-0.13	-0.06	-0.42	-0.64	0.16	0.08	0.13	0.18	0.55	0.16	0.10
Total Disposition	76.21	20.11	16.96	17.72	18.63	73.41	20.45	17.41	17.71	20.12	75.69	21.20	18.29

SPR = Strategic Petroleum Reserve

[1] Includes crude oil and lease condensate; natural gas liquids; hydrogen, etc., input to oil refineries.

[2] Dry marketed natural gas.

[3] Includes utility and industrial production.

[4] Includes wood, waste, and other vegetal fuels used to generate electricity.

[5] Includes natural gas used as refinery fuel.

[6] Reflects shipments to users and is not comparable to coal consumption by nonutility users shown on the coal tables.

[7] Includes plant use.

[8] This total excludes approximately 2 quadrillion Btu of wood.

Note: Historical data are derived from monthly data reported in the Monthly Energy Review, January 1982. Data for the fourth quarter of 1981 are based on preliminary statistics published in the Monthly Petroleum Statistics Report and the Weekly Petroleum Status Report.

Mr. **Evered**. I hope the information I have provided will be of assistance in your deliberations.

The **Chairman**. We hope so, too. Thank you very much. I think before going to questioning here we will hear from Mr. Chiles, and then we can ask questions of both, and we can then get the interplay between information and policy. Mr. Chiles, again, your full statement will be placed in the record in full, but your appendixes will be placed in committee files and you may proceed as you see fit.[1]

STATEMENT OF HON. J. HUNTER CHILES III, DIRECTOR, OFFICE OF POLICY, PLANNING, AND ANALYSIS, DEPARTMENT OF ENERGY, ACCOMPANIED BY CATHERINE ABBOTT, DEPARTMENT OF ENERGY

Mr. **Chiles**. Thank you, Mr. Chairman and members of the committee.

I am pleased to appear before you today to present DOE's testimony on the results of my office's in-depth study of natural gas pricing policy. At the outset of my testimony I would like to make it clear that while the administration believes that natural gas decontrol remains an essential component of sound energy policy, we do not intend to submit legislation this year because the legislative calendar is already too croweded.

However, I welcome the opportunity to help the committee lay the necessary groundwork for full consideration of such proposals at a later time.

Senator **Metzenbaum**. The implication I am getting is that you will submit it next year?

Mr. **Chiles**. It is our understanding, sir, that that is under consideration, yes, sir.

Senator **Metzenbaum**. Thank you.

Mr. **Chiles**. Let me try to go through this quickly so I don't read it word for word, sir, if I may.

The NGPA of 1978 was passed, as we all know, on the basis of natural gas should be decontrolled in some way by 1985, with the exception of certain quantities of old gas and some new gas. In that same statute, that statute specifically affirmed existing Federal Energy Regulatory Commission powers over natural gas rates based on what is called the just and reasonable standard. It also gave FERC some new powers to increase the price of gas under section 107 where that price is justified based on extraordinary risk or cost of such gas.

Because these provisions were part of the original statutory language, we don't feel that they should be backed away from at this time. As FERC goes into proceedings or whatever they choose to do on this matter, as appropriate the Department of Energy will make its views known on the record during such proceedings.

Now why is the Department of Energy interested in looking at natural gas? First, natural gas plays a critical role in the economy. It is about 25 percent of our energy supply.

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[1] Material retained in committee files: A Study of Alternatives to the Natural Gas Policy Act of 1978, November 1981. Appendix A, DOE/PE-0033; Appendix B, DOE/PE-0034; Appendix C, DOE/PE-0035; and Appendix D, DOE/PE-0036.

Second, the oil and gas markets have changed considerably since the current natural gas policies were established in 1978; and in recognition of these changes, Congress has modified national policy on gas use during the budget reconciliation process.

Third, the administration is committed to evaluating whether the costs of massive Federal intervention into the operation of markets might outweigh the benefits.

The results of what we found out were published in a study which I have submitted for the record, sir; and I might request that, if you publish any of this, you make it only the summary in the front. It is much too large otherwise, but I do submit that for the record.

What is the policy context of all of this? We think that the Government's history of Federal involvement in the gas market is important, and let me just go through where this all started.

Interstate natural gas prices were first placed under Federal price control as a result of the 1954 Supreme Court decision, the *Phillips* decision. Intrastate gas prices, that is, those going within a State only, were not placed under Federal control until the NGPA of 1978. Over time, the price disparity between regulated interstate gas prices and unregulated intrastate gas prices led to the shortages that Erich alluded to early on.

NGPA of 1978 emerged from resulting congressional debate. It brought, as I said, intrastate gas prices under Federal regulation for the first time and imposed even more complex price controls on interstate gas production. Under this partial decontrol approach, certain categories of gas will be decontrolled in 1985 and some later in 1987, while other categories remain price controlled until they are exhausted. We estimate that in 1985 approximately 40 to 50 percent of the domestic gas will not be decontrolled.

The NGPA provides substantially different decontrol treatment to interstate versus intrastate gas. As a result, most of the gas remaining price controlled will reside in the interstate market, and that will have interesting complications as time goes on.

The key to success of the NGPA's price structure were escalation rates designed to adjust wellhead prices up to market clearing levels by 1985 and, thus, produce a smooth transition to decontrol. Escalation rates were conceived in terms of 1978 oil prices and were fixed in the NGPA without any flexibility to adapt to changing conditions in world oil markets. Soon thereafter there was a doubling in oil prices, eliminating any hope of a smooth transition to decontrol, and exacerbating the gas market inefficiencies caused by NGPA.

Congress also recognized that undervalued gas for consumers and price limits on producers under NGPA could, during the period before decontrol, replicate the supply/demand imbalances and gas use curtailments of the 1970's. Accordingly, it chose to regulate demand through the provisions of the Power Plant and Industrial Fuel Use Act and the Public Utilities Regulatory Policies Act. As the chairman pointed out earlier, while some of the restrictions have been reconsidered and repealed, others still remain.

In addition, the incremental pricing provisions of the NGPA were designed to insulate residential and other customers from the price increases while also preventing excessive increases in wellhead prices under partial decontrol in 1985.

We evaluated NGPA. We identified three specific deficiencies in the NGPA as it stands now. We define those as a price gap, market instability, and an illusion of lower prices of energy for consumers. With respect to the price gap, it is unlikely in our estimation that NGPA will yield a smooth transition to the partial decontrol in 1985. World oil price increases since 1978 have simply outrun the prices that are built into NGPA. At the time of the study, the price of crude oil had already reached $34 a barrel. We see continued pressure to extend price controls, therefore, after 1985 when once again people will make an effort to phase-in gas decontrol in a gradual fashion, unless we do something to change the way the law statutorily would deregulate gas through 1985.

We also see market instability. There are very great differences in quantities of price-controlled gas after partial decontrol in 1985, creating potential for substantial regional supply shifts from intrastate to interstate markets and from pipeline to pipeline within the interstate market. What we see in effect is that most of the low-priced gas will go to the interstate market and not to the intrastate market which will possibly cause the embarrassing situation of having the particular States that produce gas being those least able to furnish it to their own constituencies.

I might also add one of the things that is rather interesting about this, and we heard Senator Metzenbaum talk about this earlier, about the prices of fertilizer and the availability of fertilizer, most of the fertilizer comes from gas produced in the intrastate market, exactly the market which may be in the most shortage condition and with the highest prices after 1985 if the law proceeds as it is now.

There is also this illusion of low consumer prices, and we think it is unlikely that NGPA will be able to capture the price of old regulated gas for the consumer. The deregulated prices must rise until average gas prices at retail match the industrial fuel oil prices in order to balance gas supply and demand. Erich went through that, I think, very well, showing you the different prices for different categories of gas over time and how they come out to an average.

I have a figure 1 that I think illustrates this phenomenon. The solid line shows projected price path over time for average domestic wellhead prices. Between 1984 and 1985, this average price will jump by 70 percent in real terms, that is above the rate of inflation—from $2.61 per thousand cubic feet in 1984 to $4.45 in 1985. In 1984, the highest price for conventional new, post-1977, gas is $3.28; in 1985 substantial volumes of new gas as well as some old gas are decontrolled. Our study estimates that the decontrolled price shown by the green line for the 50 to 60 percent of domestic gas decontrolled will fly up to roughly 110 percent of the price of crude oil, about $6.76 per thousand cubic feet in 1985.

The decontrolled prices fly up because regulation of gas pipelines and distribution companies allows these high prices to be averaged in with the cheaper price-controlled gas—averaging $2.06 per thousand cubic feet. As figure 1 indicates, this phenomenon decreases over time, but it is still significant in 1990 when decontrolled gas prices exceed average wellhead prices by almost $1. I would note that concerns about this type of fly up under partial decontrol were expressed by key members of the conference committee during debate over NGPA.

This fly up should be clearly distinguished from the contracts problem. They are quite different. Some analysts have argued that the contracts problem stems from the fact that some existing contracts have provisions which, if not amended, could drive average gas prices above market clearing levels. In our analysis, decontrolled prices fly up while average prices clear the market. The fly up described in our study is a direct result of market pressure on decontrolled gas prices. The excessive price increases projected under the contracts problem are a result of a rigid interpretation of current deregulation provisions in long-term contracts.

In essence, the contracts problem assumes that these deregulation provisions will initially set prices for decontrolled gas above a level which could be sustained in the market. Our study assumed that market pressures would not allow this contracts problem to develop. In our analysis most of the price cushion after 1985 goes not to gas consumers but is absorbed by high prices for deregulated gas. This conclusion has important consequences for an evaluation of the price effects of alternatives to the NGPA.

While our study considers a number of policy alternatives to the NGPA, I would like to discuss briefly the impacts of policies which phase out all price controls by 1985, which I will hereinafter call phased decontrol.

Phasing smooths over the 1982 to 1985 period the abrupt price increases associated with either the NGPA in 1985 or the immediate full decontrol; and in turn, the consumer and macroeconomic consequences which stem from abrupt price changes are reduced.

Phased decontrol improves the efficiencies of U.S. energy markets through increasing market incentives for conservation, encouraging market-based decisions to convert to less costly alternative fuels, allocating available gas supplies to users who value it the most, and allowing market prices rather than price controls to allocate resources to different sources of gas supplies so that the least cost supplies will be developed and produced before the most expensive supplies.

Phased decontrol would increase prices gradually to consumers rather than causing sudden price increases. This can be seen in the next figure—figure 2—which compares our estimates of average wellhead prices under NGPA, shown in the orange line, and average wellhead prices under a phased decontrol system, shown by the green line. You can see from the chart that phased decontrol smooths out abrupt price increases seen in 1985 under the NGPA, but as you see, the prices are about the same after 1985.

I might add that, under phased decontrol, the average bills for gas-heated residences increase by $40 to $80 per year in 1981 to 1985—in 1980 dollars. That is above inflation. Under NGPA, the average residential bill increases $20 per year through 1984, and then jumps abruptly by $170 in 1985. The differences among the policies center only on when and how abruptly residential bills move from today's level to the level associated with the decontrolled market.

Phased decontrol is likely to have a relatively small macroeconomic effect. In the short run, demand-oriented macroeconomic models predict phased decontrol may reduce actual GNP—slightly less than half a percent—increase inflation somewhat—by less than 1 percentage point—and increase the unemployment rate by a small amount—zero to point 2 percentage points annually. However, these small short-run costs are likely to be far outweighed by the long-term benefits to the economy. Benefits measured in terms of improvement in potential GNP are projected to be as high as $38 billion.

Unfortunately, standard macroeconomic analysis does not capture fully the efficiency gains associated with decontrol. Consequently, the estimate of that impact associated with phased decontrol is probably overstated. Our experience with oil decontrol makes us optimistic that the benefits to the economy of market-based pricing will outweigh the short-term effects of higher gas prices.

Phased decontrol would correct the major deficiencies of the NGPA by improving the efficiency of gas resource allocation, phasing up prices smoothly to a decontrolled market in 1985, and removing the causes of market instability under NGPA.

The study concludes that a frame of reference is critical to the question of whether to pursue a new gas policy before 1985. If events confirm that the transition to decontrol will not be smooth under NGPA, expectations of abrupt price increases and market disorder will create pressure for extending controls. Large stakes are involved in selecting a course of action today which ultimately results in extending controls well beyond 1985.

Mr. Chairman, this concludes my formal presentation. With me today is Cathy Abbott who authored the study for the DOE. We would be happy to answer any questions you or members of the committee have. Cathy will back me up if you wish to get into intricate detail on the numerical aspect of this study.

[The prepared statement of Mr. Chiles follows:]

STATEMENT OF HON. J. HUNTER CHILES III, DIRECTOR, OFFICE OF POLICY, PLANNING, AND ANALYSIS, DEPARTMENT OF ENERGY

Mr. Chairman, members of the Committee, I am pleased to appear before you today to present DOE's testimony on the results of my office's indepth study of natural gas pricing policies. At the outset of my testimony, I would like to make it clear that while the Administration believes that natural gas decontrol remains an essential component of sound energy policy, we do not intend to submit legislation this year because the legislative calendar is already too crowded. However, I welcome the opportunity to help the Committee lay the necessary groundwork for full consideration of such proposals at a later time.

I think it is important to set the stage by touching briefly on the current statutory scheme.

The Natural Gas Policy Act of 1978, adopted by a bipartisan majority, established the principal that, in general, natural gas should be decontrolled by 1985 with some exceptions for certain categories of "old" (pre-1977) gas and some new gas. We certainly believe that there should be no backsliding on this commitment. The statute also specifically affirmed existing Federal Energy Regulatory Commission (FERC) powers over natural gas rates, based on a "just and reasonable standard." It also gave FERC new powers to increase the price of gas under Section 107, where this price is justified, based on the extraordinary risk or cost of such gas. Because these provisions were a basic part of the statutory scheme embodied in the NGPA, we see no justification for ad hoc restrictions on these particular sections. The outcome of any particular proceeding under these statutory authorities will depend, of course, on the specific proposal made, and the record and evidence established in that proceeding. As appropriate, the Department of Energy will make its views known on the record in such proceedings.

Looking toward the broader question of an evaluation of the current operation of the NGPA, Secretary Edwards first initiated this study of natural gas pricing policies in March, 1981, for three reasons. First, natural gas plays a critical role in U.S. energy markets, accounting for roughly 25 percent of U.S. energy use. Second, oil and gas market conditions have changed considerably since current natural gas policies were established in 1978. Indeed, in recognition of these changes, Congress modified national policy on gas use during the budget reconciliation process. Third, the Administration is committed to evaluating whether the costs of massive Federal intervention into the operation of markets outweigh the benefits.

The results of the study were published by the Department in November, 1981, and include a summary volume and four accompanying appendices. The Department made this material available at this exhaustive level of detail to provide interested parties, including the Congress, the opportunity to compare our analysis with other assessments of the problem.

I would like to ask that the complete report, including appendices, be submitted as a part of my testimony here today.

The Policy Context

Because today's natural gas policies are strongly influenced by the history of federal involvement in gas markets, I will first briefly review that history. Interstate natural gas prices (gas sold across state lines) were first placed under Federal price controls as a result of the 1954 Supreme Court decision in Phillips Petroleum Company v. Wisconsin. Intrastate gas prices were not controlled until the passage of the Natural Gas Policy Act of 1978 (NGPA). Over time, the price disparity between regulated interstate gas prices and unregulated intrastate gas prices led to shortages of natural gas in the interstate markets in the 1970's. The policy problems posed by this "two market" system were a key impetus to Congressional consideration of natural gas pricing in 1977-78.

The Natural Gas Policy Act of 1978 emerged from the resulting Congressional debate. It brought intrastate gas under Federal regulation for the first time and imposed even more complex price controls on interstate gas production. Under the partial decontrol approach enacted in the NGPA, wellhead prices for certain categories of gas will be decontrolled in 1985 and some later, in 1987. Other categories remain price-controlled until exhausted. Specifically, we estimate that 40 to 50 percent of domestic gas will not be decontrolled in 1985. The NGPA provides substantially different decontrol treatment to interstate vs. intrastate gas. As a result, most of the gas remaining price-controlled will reside in the interstate market.

The NGPA's partial decontrol phased over time reflects 1978's judgments about U.S. energy, macroeconomic and social policy. The Act was based on the premise that Federal management of domestic energy markets is appropriate and workable. For example, its framers believed that an artfully-crafted price structure could stimulate domestic gas production and avoid unwanted consumer and macroeconomic impacts. Specifically, higher prices for "new" gas could maximize supply while continued price controls on "old" gas could keep consumer prices low.

Key to success of the NGPA's price structure were escalation rates designed to adjust wellhead prices up to market-clearing levels by 1985 and, thus, produce a smooth transition to decontrol. These escalation rates were conceived in terms of 1978 oil prices and were fixed in the NGPA without any flexibility to adapt to changing conditions in world oil markets. Soon thereafter a doubling of oil prices eliminated any hope of a smooth transition to decontrol and exacerbated the gas market inefficiencies caused by the NGPA.

Congress also recognized that undervalued gas for consumers and price limits on producers under the NGPA could, during the period before decontrol, replicate the supply-demand imbalances and gas use curtailments of the 1970's. Accordingly, it chose to regulate demand through provisions of the Powerplant and Industrial Fuel Use Act and the Public Utilities Regulatory Policies Act. While some of these restrictions have already been reconsidered and repealed, others remain. In addition, the "incremental pricing" provisions of the NGPA were designed to insulate residential and other customers from the price increases while also preventing excessive increases in wellhead prices under partial decontrol in 1985.

In sum, the efforts to reform natural gas policy in 1978 soon became a complex exercise in economic engineering, wherein regulation begat more regulation.

Evaluation of the NGPA

The study identifies three key deficiencies in the NGPA:

(1) The Price Gap
(2) Market Instability
(3) The Illusion of Low Consumer Prices

The Price Gap: The NGPA is unlikely to yield a smooth transition to partial decontrol in 1985. World oil price increases since 1978 have outrun the prices built into the NGPA. At the time of the study, the price of crude oil had already reached $34 a barrel, a level twice the NGPA's price assumptions. The resulting gap between gas and oil prices raises the prospect of a sudden gas price increase at the time of decontrol. This prospect may create pressure to extend price controls beyond 1985, once again in an effort to "phase-in" gas decontrol in a gradual fashion.

Market Instability: The NGPA also is likely to disrupt the U.S. gas market. Differences in the quantities of price-controlled gas after partial decontrol in 1985 create the potential for substantial regional supply shifts from the intrastate to the interstate market and from pipeline to pipeline within the interstate market. Because pipelines and distribution companies are allowed to average together the price of their deregulated gas and their regulated gas, pipelines with large endowments of cheaper, price-controlled gas can afford to out-bid pipelines with smaller endowments when competing for deregulated gas supplies Thus, pipelines with smaller endowments are likely to be disadvantaged in competing for deregulated gas supplies after partial decontrol. Perceived inequities stemming from this uneven endowment of lower priced gas may create pressure for a government allocation program, similar to the "entitlements" program that was used by the government to distribute oil. The experience with that program provides ample evidence that government allocations disrupt markets and substitute new and greater inequities for those the program is designed to cure.

The Illusion of Low Consumer Prices: The NGPA is unlikely to capture the "price cushion" of old regulated gas for consumers. In a market containing the old cheap gas, deregulated prices must rise until average gas prices at retail match industrial fuel oil prices in order to balance gas supply and demand. As a result, average prices under the NGPA after 1985 are not likely to be much different than they would be if all gas prices were decontrolled in 1985. This point is important and bears some explanation.

Figure 1 illustrates this phenomenon. The solid line shows the projected price path over time for average domestic wellhead prices. Between 1984 and 1985, this average price jumps by 70% (in real terms, that is, above the rate of inflation) from $2.61/mcf (1980 $) to $4.45/mcf. In 1984, the highest price for conventional "new" (post-1977) gas is $3.28/mcf. However, in 1985, substantial volumes of "new" gas (as well as some "old" gas) are decontrolled. Our study estimates that the decontrolled price (shown by the dotted line in Figure 1) for the 50-60% of domestic gas which is decontrolled will "fly-up" to roughly 110% of crude oil prices ($6.76/mcf) in 1985. The decontrolled prices "fly-up" because regulation of gas pipelines and distribution companies allows these high prices to be averaged in with cheaper price-controlled gas (averaging $2.06/mcf in 1985). As Figure 1 indicates, this phenomenon decreases over time, but is still significant in 1990, when decontrolled gas prices exceed average wellhead prices by almost $1.00/mcf. I would note that concerns about this type of "fly-up" under partial decontrol were expressed by key members of the Conference Committee during the Congressional debate over the NGPA.

This "fly-up" phenomenon should be clearly distinguished from the "contracts problem." Some analysts have argued that the contracts problem stems from the fact that some existing contracts have provisions which, if not amended, could drive average gas prices above market clearing levels. In our analysis, decontrolled prices fly up while average prices clear the market. The fly-up described in our study is a direct result of market pressures on decontrolled gas prices. The excessive price increases projected under the "contracts problem" are a result of a rigid interpretation of current deregulation provisions in long-term contracts. In essence the "contract problem" assumes that these deregulation provisions will initially set prices for decontrolled gas above a level which could be sustained in the market. Our study assumed that market pressures would not allow this "contracts problem" to develop.

Thus, in our analysis most of the "price cushion" after 1985 goes not to gas consumers, but is absorbed by high prices for deregulated gas. This conclusion has important consequences for an evaluation of the price effects of alternatives to the NGPA.

Phased Decontrol by 1985

While the study considers a number of policy alternatives to the NGPA, I would like to discuss briefly the impacts of policies which phase out all price controls by 1985 (hereafter termed "phased decontrol"). Phasing smooths over the 1982 to 1985 period the abrupt price increases associated with either the NGPA in 1985 or with immediate full decontrol. In turn, the consumer and macroeconomic consequences which stem from abrupt price changes are reduced.

Phased decontrol improves the efficiency of U.S. energy markets through:

- increasing market incentives for conservation;
- encouraging market-based decisions to convert to less-costly alternative fuels;
- allocating available gas supplies to users who value it most; and
- allowing market prices, rather than price controls, to allocate resources to different sources of gas supplies so that the least cost supplies will be developed and produced before the most expensive supplies.

Phased decontrol would increase prices gradually to consumers, rather than causing sudden price increases. This can be seen in Figure 2 which compares our estimates of average wellhead prices under the NGPA (shown in the solid line) and average wellhead prices shown under phased decontrol (shown by the dotted lines). As can be seen from the chart, phased decontrol smooths out the abrupt price increase seen in 1985 under the NGPA. While phased decontrol would increase prices somewhat in the 1982-1984 time period, average wellhead prices are very similar after 1985. Thus, the consumer impact of phased decontrol after 1985 is negligible compared to the NGPA.

Under phased decontrol, average bills for gas-heated residences increase by $40 to $80 per year from 1981 to 1985 (above inflation). Under the NGPA, average residential bills increase $20 per year through 1984 and, then, jump abruptly by $170 in 1985. The differences among the policies center only on when and how abruptly residential bills move from today's level to the level associated with a decontrolled gas market.

Phased decontrol is likely to have relatively small macroeconomic effects. In the short run, demand-oriented macroeconomic models predict that phased decontrol may reduce actual GNP slightly (by less than .5 percent), increase inflation somewhat (by less than one percentage point), and increase the unemployment rate by a small amount (0 to .2 percentage points annually).

However these small short run costs are likely to be far outweighed by long-term benefits to the economy. These benefits, measured in terms of improvements in potential GNP, are projected to be as high as $38 billion. Unfortunately standard macroeconomic analysis does not capture fully the efficiency gains associated with decontrol. Consequently, the estimates of adverse impacts associated with phased decontrol are probably overstated. Our experience with oil decontrol makes us optimistic that the benefits to the economy of market-based pricing will outweigh the short-term effects of higher gas prices.

Phased decontrol would correct the major deficiencies of the NGPA by improving the efficiency of gas resource allocation, phasing up prices smoothly to a decontrolled market in 1985, and removing the causes of market instability under the NGPA.

The study concludes that the frame of reference is critical to the question of whether to pursue a new gas policy before 1985. If events confirm that the transition to decontrol will not be smooth under the NGPA, expectations of abrupt price increases and market disorder will create pressure for extending controls. Large stakes are involved in selecting a course of action today which ultimately results in extending controls well beyond 1985.

Mr. Chairman, this concludes my formal presentation. I would be happy to answer any questions you or the members of your Committee may have.

Figure 1

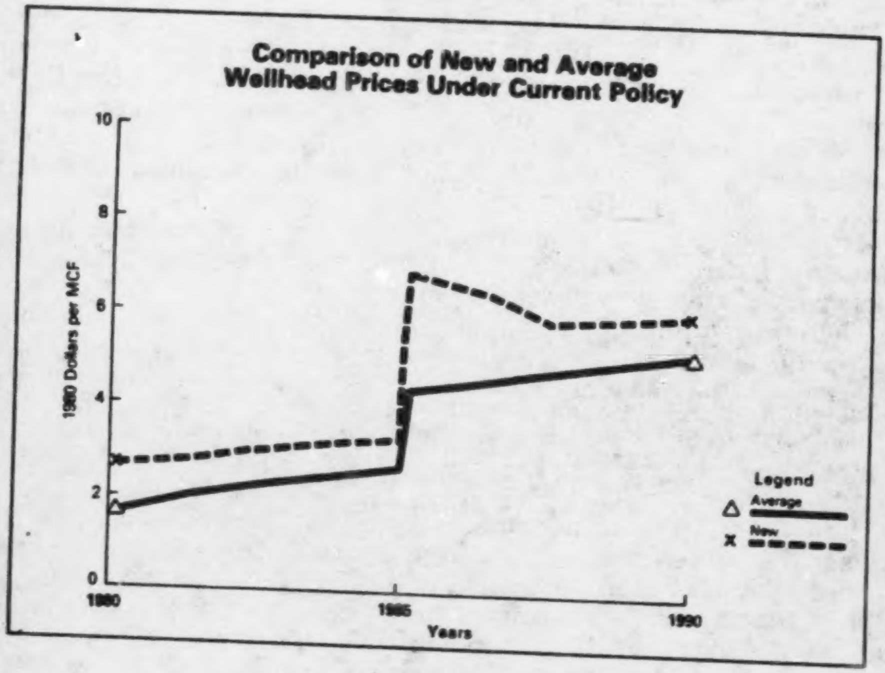
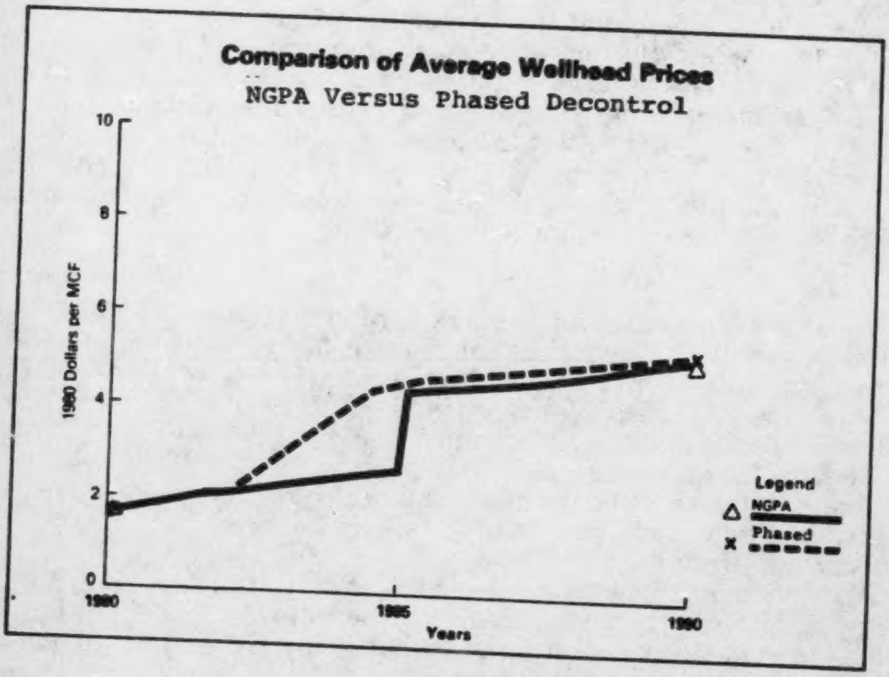


Figure 2



The CHAIRMAN. I thank you both. I think we will try to operate the first round under a 5-minute rule and we will go back for a second round, operating again under the 5-minute rule. We do have another witness scheduled for today, and in that manner we may be able to get through the witness list today in a reasonable manner.

I would like to ask this question first, Mr. Chiles. As I recall, the assumption made at the time NGPA was passed was that natural gas being a premium fuel in limited supply, had a value of about 110 percent of No. 6 diesel. Wasn't that the assumption at that time, or do you recall?

Mr. CHILES. Sir, unfortunately, that was before my time in government. I believe, though, if I recall, that was the price at the burner tip. Cathy, do you remember?

[The information follows:]

The NGPA was not, to my knowledge, specific about what the value of gas was at the burner tip. There was a perception in the NGPA that gas was a premium fuel. The incremental pricing provisions in Title II of the NGPA provide that certain industrial users pay prices as high as the equivalent of distillate and perhaps as low as high sulfur residual fuel oil. The NGPA clearly anticipated relatively flat world oil prices through 1985 (at roughly $15/bbl in 1978 dollars).

The CHAIRMAN. And is not the assumption now that natural gas prices will be determined by the industrial user load rather than the domestic user load?

Mr. CHILES. Yes, sir, I believe that is correct, and the percentage that we are used to talking about now is that if the price of gas at the wellhead is 70 percent of the price of crude oil at the wellhead, by the time it goes and gets to the burner tip, the prices are equated.

The CHAIRMAN. Equated?

Mr. CHILES. Equated at the burner tip, yes, sir.

The CHAIRMAN. But not at the premium price?

Mr. CHILES. Not at a premium, no, sir.

The CHAIRMAN. You point out, and I think the statistics indicate, and Mr. Evered, if you would comment, if indeed the statement I make is wrong, that Canadian imports are dropping and that that is partly the result of fuel shifting to residual fuel oils. Is that correct? Mr. Chiles, would you comment first?

Mr. CHILES. I can't comment on that.

The CHAIRMAN. Mr. Evered?

Senator METZENBAUM. I don't wish to interrupt your line of questioning, but for my own time schedule, could you give us some idea when Mr. Butler will be heard by the committee?

The CHAIRMAN. It depends upon the members of the committee. We are operating under the 5-minute rule.

Senator METZENBAUM. He is our next witness?

The CHAIRMAN. Yes. It depends upon how many questions are asked and how many rounds of questions we have.

Senator METZENBAUM. Thank you.

Mr. EVERED. It is with pleasure that I state that the chairman is very seldom wrong, and, inded, you may not be this time, but we have no evidence to substantiate what you have said, or to contradict it.

The CHAIRMAN. It is true in the Northwest I believe, I don't know whether it is true nationwide, that as the price of the Canadian gas remained high and since we have very little old gas to roll in the price of Canadian gas, the price of natural gas in the Pacific Northwest is, in effect, virtually decontrolled. I think that a little less than 70 percent of total supplies are imported Canadian gas. And as price rose rapidly fuel shifting did occur, and the result was a loss of sales. This is a matter of concern to some of our friends north of the border because they have seen this fuel shifting going on.

If that is the case, then the price of residual fuel oil will be the determining price in a free marketplace. If industry has fuel shifting capacity, and if residual fuel oil is available, and if indeed the industrial market is the marginal consumer of natural gas, Mr. Evered, is that latter case correctly stated, that they are the marginal consumer?

Mr. EVERED. It is quite conceivable that on a regional basis, especially remote from gas sources, that fuel oil switching away from gas could take place if the price of gas were to exceed the cost of using fuel oil.

The CHAIRMAN. Senator Exon made reference to the Merrill Lynch report which indicates among other things, that they did not expect a substantial price spike to occur in 1985, based on certain assumptions with respect to the inflation rate in this country as well as the stability of the oil price. And their estimate, quoting from their report, is that the average price of natural gas by the end of 1984 under the decontrol mechanism would be $3.75 to $4 per million Btu.

Does that conform to your estimate, Mr. Chiles?

Mr. CHILES. Our estimate looked on the other side of what would the price of oil have to be so that you didn't have a fly-up effect, sir, and it comes out in oil price somewhere in the high twenties.

The CHAIRMAN. You looked at it from oil, but you weren't looking at it from the standpoint of the price of natural gas? Could you equate the two?

Mr. CHILES. It would be about the same. If you say $27 a barrel, and you divide that by 5.8 million Btu's, you are going to come out about $3.75, $4.

The CHAIRMAN. And they then estimated, too, that in line with that estimate after decontrol the price would rise to $4 to $4.25.

Mr. CHILES. I am not so sure about that.

The CHAIRMAN. Mr. Evered, would you care to comment?

Mr. EVERED. Mr. Chairman, the average price for gas under the NGPA in 1984 prior to the 1985 partial deregulation, which Merrill Lynch's study apparently states and which you quoted is in excess of what we estimated the average gas price will be in 1984. This assumes we are talking in 1980 dollars.

The CHAIRMAN. Thank you very much. My time has expired. Senator Johnston?

Senator JOHNSTON. Thank you, Mr. Chairman. Mr. Chiles or Mr. Evered, either one of you, what do you expect gas to sell for on the day before 1985, in terms of average price? What are the limits?

Mr. CHILES. The day before we expect it to sell for $2.61. That is in 1980 dollars.

Senator **Johnston**. How about in 1984 dollars? I know you have got some assumptions on inflation.

Mr. **Chiles**. Let me do that for the record if I may, sir. I don't know what inflation we are using for the out-years.

[The information follows:]

Using the Administration's inflation rate assumptions, the average wellhead price in 1984 would be $3.73/mcf in mid-1984 dollars. Merrill Lynch assumed an inflation rate of 8 percent, which would make their 1984 price of $3.75 to $4.00 equivalent to $2.65 to $2.83/mcf in 1980 dollars. Thus in 1984, our estimated price (in real 1980 dollars) is very similar to Merrill Lynch's estimate. What is different is an estimate of world oil prices in 1985: we assumed a world oil price of $35/bbl (1980 dollars) while Merrill Lynch apparently assumed a world oil price in the range of $23-24/bbl (1980 dollars). I have put both estimates in real 1980 dollars because different forecasters use widely different inflation rates.

Senator **Johnston**. The reason I asked the question is that it is very important I think. What Merrill Lynch says is that gas will be selling for on the average $3.75 to $4 right before the deregulation, and that after decontrol it will be $4 to $4.25, on the basis of which they predict no price spike at all.

I might also say if they are correct, that means that if we decontrol now, that there would be no price change because under NGPA, some gas prices go up with inflation, and other gas prices go up at inflation plus 4 percent. So, if they are correct, that means we could deregulate with virtually no change at all; isn't that correct?

Mr. **Chiles**. If there were lower prices, correct, yes, sir. I have some figures here that I think are important. This 1984 wellhead price that I mentioned in 1980 dollars of $2.61 per thousand cubic feet in our study is equivalent to a Merrill Lynch figure of between $2.65 and $2.83 per thousand cubic feet, so we are essentially talking the same in 1984. The difference is in the 1985 crude oil. We think we have in our study $35 in 1980 dollars. They have a $23 to $24 figure. That is the difference.

Senator **Johnston**. Well, you are about the same in your 1985 price.

Mr. **Chiles**. No; the 1985 price is very different. The 1984 price is similar, yes, sir.

Senator **Johnston**. January 30; I mean December 30, 1984. You are about the same.

Mr. **Chiles**. Within pennies.

Senator **Johnston**. All right, and so that it will depend then on the price of crude as to whether you have the fly-up or not?

Mr. **Chiles**. Precisely, and this is why one of the proposals that we had in our corrected NGPA package would be to put in a system that gradually phased the price of natural gas up to 70 percent of crude oil prices. As the oil market went up and down so the price of gas, so we would always be equivalent on the basis of 70 percent of the price of crude at the wellhead, and this made it very nice because then no matter what happened to the price of crude oil in the world market you knew that you were doing the right thing with the natural gas price.

Senator **Johnston**. All right. Well, I wish you would furnish that for the record because I think that is very important. Now I think it is also important for the press particularly to keep in mind that under both of those studies, yours and Merrill Lynch, that the price of natural gas on the average will more than double under NGPA over the next 2 years; is that correct?

Mr. CHILES. Not in real terms, sir.

Senator JOHNSTON. Excuse me—3 years, between now and deregulation.

Mr. CHILES. Possibly in inflated terms, yes, it would, but we don't see that in real terms.

Senator JOHNSTON. I am talking about in dollars it would go up from approximately—what is it now, less than $2 on the average; is that correct?

Mr. CHILES. It would jump by 85 cents to the mid-$4.50's.

Senator JOHNSTON. From $1.85?

Mr. CHILES. Under NGPA, 1978, yes, sir.

Senator JOHNSTON. I think that is important to know because those who think that NGPA is going to hold the price of gas down are wrong. It is going to more than double. The difference is going to be whether we deregulate and whether you will have the different categories of gas in some kind of balance or whether you are going to have that wide swing. Currently you have got some categories of gas as low as 26 cents per thousand cubic feet, and others as high as $10, so that under the NGPA some molecules of methane are selling for 40 times as much as others, which is unquestionably causing market dislocation.

Mr. Evered, I think you spoke about these dislocations. Would you explain to the committee what you mean by the dislocations because it is very important for them to understand what is happening, particularly in the phosphate market.

Mr. EVERED. You mean with respect to market ordering and competitiveness?

Senator JOHNSTON. We have shortage in the intrastate market now.

Mr. EVERED. Yes; chart 4 depicts the reserves dedicated to respectively, the interstate and the intrastate markets. These curves are not cumulative. They are comparative.

Senator JOHNSTON. I understand those curves. I am about out of time, but the point is this, the Williams Bros. say you have a shortage right now of 20 percent in the intrastate market. I don't know whether they are correct or not. They project this shortage is going to grow to 35 percent next year and 50 percent the year after.

I think that is probably overstated, but they say that there is the shortage now in the intrastate market in Louisiana which is being supplied by short-term, interruptible contracts.

Mr. EVERED. That's right. Intrastate pipelines are at a competitive disadvantage in bidding for new reserves.

Senator JOHNSTON. Do you know what the dimensions of that shortage are and do you have any information on what kind of interruptible contracts?

Mr. EVERED. I don't have that specific information. It varies from State to State. Louisiana pipelines, for instance, are in a different position from those in Oklahoma. We would be happy to provide what information we have for the committee.

[The information follows:]

The most current data and analysis we have is contained in the EIA report, *The Current State of the Natural Gas Market*, December 1981. A complete copy of the report has been provided to the Committee. The attached table from the report shows the estimated reserves and production for interstate and intrastate markets in selected States, including Louisiana.

Note that prior to passage of the NGPA in 1978, the share of reserves dedicated to intrastate markets was increasing, while after 1978, the share has been decreasing. While not as pronounced as in Louisiana, this same general trend has been occurring for the total of all Lower 48 States on shore reserves. These trends are a strong indication of the competitive disadvantage of intrastate pipelines in biding for new reserves.

THE CURRENT STATE OF THE NATURAL GAS MARKET, DECEMBER 1981

TABLE 8.—ESTIMATED RESERVES AND PRODUCTION FOR INTERSTATE AND INTRASTATE MARKETS IN TEXAS, LOUISIANA, AND OKLAHOMA

[Trillion cubic feet of dry gas]

Area	1976	1977	1978	1979	1980
Texas onshore:					
Interstate:					
Reserves	17.7	15.8	15.7	15.5	14.9
Production	2.6	2.4	2.1	2.2	2.2
Intrastate:					
Reserves	37.1	35.1	33.5	29.6	27.9
Production	3.2	3.9	3.8	3.7	3.3
Total:					
Reserves	54.8	51.1	49.2	45.1	42.8
Production	5.8	6.3	5.9	5.9	5.6
Louisiana onshore:					
Interstate:					
Reserves	12.2	9.4	8.4	8.1	8.0
Production	1.7	1.4	1.3	1.1	1.1
Intrastate:					
Reserves	11.4	12.3	12.6	8.7	8.1
Production	1.1	1.3	1.3	1.2	1.1
Total:					
Reserves	23.6	21.7	21.0	16.8	16.1
Production	2.8	2.7	2.6	2.3	2.2
Oklahoma:					
Interstate:					
Reserves	8.0	7.5	7.9	8.3	9.3
Production	.9	.9	.9	.9	1.0
Intrastate:					
Reserves	6.3	6.4	6.5	5.5	3.8
Production	.7	.8	.8	.6	.6
Total:					
Reserves	14.3	13.9	14.4	13.8	13.1
Production	1.6	1.7	1.7	1.6	1.5
Lower 48 States (excluding offshore):					
Interstate:					
Reserves	72.8	69.0	69.3	71.2	74.5
Production	7.3	7.1	6.8	6.9	6.9
Intrastate:					
Reserves	67.8	65.5	65.5	56.7	52.3
Production	7.5	7.1	7.0	6.6	6.1
Total:					
Reserves	140.6	134.5	134.8	127.9	126.8
Production	14.8	14.2	13.8	13.5	13.0

Sources: The FERC Form 15, the Form EIA-23 and the American Petroleum Institute (API) annual reports [2, 25, 34]. Volumes are on a "Dry" gas basis. Uncommitted reserves estimates are prorated through each category. The method of allocation may overstate intrastate reserves. See appendix A.

Senator **Johnston**. I wish you would, and we also need an analysis of what happens if the interruptible contracts get terminated. It is not just a problem for Louisiana. It is a problem for all those purchasers of the petrochemical stocks that we produce now.

Mr. Evered. In addition to that the industrial interruptible customers do, indeed, cancel their contracts and drop off the system, it will substantially increase the cost of service to residential and commercial users.

[The information follows:]

The EIA has not yet done any studies with regard to specific shortages in individual intrastate markets or the ramifications of interruptible contracts on consumers. As the analyses we are currently conducting are completed, we will begin investigating other issues, such as these, on a priority basis.

Senator Johnston. Thank you. My time is up.

Senator Nickles [presiding]. Thank you, Senator. I will stay on some of the same lines as Senator Johnston. I would like you to keep that one chart up. If you had that over several years it would show some increase.

Mr. Evered. Let's go to chart No. 2.

Senator Nickles. Leave that there.

Mr. Evered. We have a better one.

Senator Nickles. We have had declining gas reserves basically going back how far?

Mr. Evered. To 1971.

Senator Nickles. And total gas reserves particularly those in the interstate market have fallen, whereas the intrastate was barely level until when, the enactment of the NGPA?

Mr. Evered. That is correct, around 1978.

Senator Nickles. So now that we have seen the interstate reserves somewhat increased, we have seen the intrastates decline considerably.

Mr. Evered. That is correct.

Senator Nickles. Now to go back to a statement that was made earlier, intrastates were not under any price regulations before 1978, is that correct?

Mr. Chiles. That's right, yes, sir.

Senator Nickles. Just going on the price, the price for intrastate back in 1978, how did that compare to the interstate, interstates being controlled?

Mr. Evered. The bottom curve on chart 3 shows the comparative price differential for 1963 though 1979. The lower solid line represents the interstate average purchase acquisition price, and the dashed curve represents intrastate price. As you can see, from about 1973 forward there was a substantial difference between the two, the intrastate price being significantly in excess of the interstate price.

Senator Nickles. From at least 1973 on intrastates were paying quite a bit more for gas, but they actually had ample reserves throughout that period of time, whereas under the controlled State for the interstate market where you had declining reserves and you had your shortages, shutdowns, your brownouts, et cetera, is that correct?

Mr. Evered. That is correct.

Senator Nickles. So the increase now that we see in reserves is actually at the expense of the intrastate market, is that correct?

Mr. Evered. There is a fixed amount of new gas available in any given year, and if the interstate pipelines successfully bid for it, then it is not available to the intrastate.

Senator Nickles. Let's take the deep gas. Large volumes of deep, uncontrolled gas, which in the past in the intrastate market all gas was decontrolled, but now that we have only deep gas as really, or decontrolled gas is almost all the gas contracts for the little bit of decontrolled gas now, is that going to the interstate markets?

Mr. Evered. Our information shows that they are both successfully bidding for some of the deep gas.

Senator Nickles. Intrastate?

Mr. Evered. Intrastate to a degree, but not to the degree interstates are.

Senator Nickles. Because they have been paying higher prices and they didn't have the, quote, low, frozen, the old controlled gas prices, the rolled in?

Mr. Evered. Would you restate the question?

Senator Nickles. Is the reason why the intrastates are not able to compete with the interstate for the deep decontrolled gas because they don't have this volume of, quote, old, controlled gas?

Mr. Evered. The potential certainly is there, and it is conceivable, although we don't have any direct evidence at this time, of the relationship.

Senator Nickles. It makes sense to me if the intrastates were paying a lot more for the last many, many years, they didn't have the cheaper gas that the interstates had, and therefore, they couldn't have that rollover cushion effect to be able to pay the $9 for gas.

Mr. Evered. That is quite correct.

Senator Nickles. Nine dollars won't sell in a fertilizer plant and some of these other plants. Therefore, they are somewhat priced out. What we have, and going back to your comments, we have a lot of this so-called gas cushion that is not really there.

Mr. Chiles. When you look at the inter versus the intrastate market after 1985, you will find much, much more of the cushion in the interstate market than the intrastate market, so the intrastate market is going to be at a comparative disadvantage in not having a lot of cheap, old gas to roll in.

Senator Nickles. Which will continue to exacerbate itself as time goes on. One additional quick question—on the idea we are talking about gas prices going up, Senator Johnston said the Merrill Lynch study says gas prices may double in the next couple of years with or without NGPA.

How does that compare to fuel oil? Right now if you are going to heat your home in Washington, D.C., is it cheaper to heat with gas or fuel oil?

Mr. Evered. Senator, chart 2, which also appears in my testimony, depicts our projections of the prices to the residential consumer of three competing fuels—natural gas, heating oil, and electricity. Uniformly through 1990, natural gas will remain competitive in the residential sector.

Senator Nickles. I don't see it, but right now is natural gas about 60 percent of the cost of heating oil?

Mr. Evered. Perhaps about that.

Senator NICKLES. And about what percent of electricity?

Mr. EVERED. Maybe 30 percent.

Senator JOHNSTON. Is that for the efficiency of using the electricity?

Mr. CHILES. It is not.

Mr. EVERED. It is the delivered price to the residence.

Senator NICKLES. My time has expired, but to summarize, natural gas is about a third as expensive as electricity today to heat your home?

Mr. EVERED. Discounting the efficiency comparison, delivered to the home, it is about a third as expensive.

Senator NICKLES. And the fuel oil?

Mr. EVERED. For fuel oil, perhaps better than half.

Senator NICKLES. OK. My 5 minutes has expired. Senator Ford?

Senator FORD. You say that to heat your home today with natural gas is one third the cost of fossil fuel-generated electricity?

Mr. EVERED. No, not necessarily.

Senator FORD. I didn't think so. The way you answered his question, the way you agreed with him, it would cost one-third.

Mr. EVERED. The comparison does not take into account the efficiency of using electricity versus natural gas for heating the home. If the use of electricity is more efficient than the use of natural gas, then the actual total cost, not talking about price, but the cost of heating may not necessarily be at the same relative level.

Mr. CHILES. If I might add on that, the average efficiency of a gas furnace in the home is about 50 percent. The average efficiency of an oil furnace is about 40 percent. Electricity using residential heating is 100 percent efficient, and using a heat pump, it is the equivalent of between 200 and 225 percent efficiency, so that on a relative basis when you get down to useful heat delivered to the room, the electricity number drops considerably, but the relative oil to gas ratio is still there.

Senator FORD. I may be wrong, but he asked about the cost in the D.C. area. Electricity is far less than the other costs according to the information I have. I may be wrong. I don't see any heads going up or down or sideways in the crowd.

Mr. Evered, you show on page 12 of your statement, since I don't have very long, you talk about you are currently engaged in several activities which bear on the issues.

First, you are compiling data on current natural gas contract provisions, and you will have that in June.

Second, you have undertaken analysis to determine economic and other market impacts on a regional basis, and you will have that done this fall.

Third, EIA has compiled volume of drilling reserves and production data by depth. I am not sure you said when you will have that ready.

Fourth, we are currently investigating downstream problems of pipelines and distributors. That may become important in any future debate on regulatory reform.

When will you have all four of those in place where we can have a handle on it?

Mr. EVERED. The fourth item you mentioned is part of an ongoing effort. At this time I don't have an estimate of when we will have a deliverable product on that. As part of our continuing responsibility to provide information and analyses to the Congress and the administration, we will look into this area. I don't have a firm schedule in mind.

With regard to the data which can be brought to bear in considering the FERC's proposed rulemaking on near-deep gas, I expect within 1 month or 2 we will have some data available in this regard. We have the data in-house. It is a matter of weeding through it, sorting it, and trying to draw some conclusions.

Senator FORD. Do you have an idea of how many wells were drilled between 10,000 and 15,000 feet in 1977 through 1981?

Mr. EVERED. I do not today, but I would be happy to provide that for the record.

Senator FORD. Mr. Chiles, do you have it?

Mr. CHILES. I think I do, yes, sir. What I have here is from the American Petroleum Institute.

Senator FORD. We have heard testimony. You can't really agree with all that. We have formed our own agency to try to filter out the facts.

Mr. EVERED. The data are incomplete. We would be happy to provide what we have when our analysis is complete.

Senator FORD. Would you also give me the wells drilled between 10,000 and 15,000 and over 15,000 at the same time, the comparison of 1977 through 1981?

Mr. EVERED. Certainly; it is the yearend 1981 data that are incomplete.

[The information follows:]

We are currently analyzing data from the American Petroleum Institute, the Federal Energy Regulatory Commission, and other sources as part of the Near Deep issue. As I previously mentioned, I expect we will have analyzed the data we do have within a month or two. We plan to complete our report on the subject during the summer and will provide the information to the Committee.

Senator FORD. That is what I would like to have. Mr. Chiles, phased deregulation would cost the consumer how much in the next 3 years if we implemented it today?

Mr. CHILES. Between $40 and $80 per year.

Senator FORD. How much extra money would that be costing the consumer each year or what would be the total increased cost to the consumer over the next 3 years?

Mr. CHILES. Between $120 and $240 per year.

Senator FORD. No—total, mass, what is the total cost in billions of dollars? Let's talk your language. Instead of $20 or $40, let's talk the agency's language in billions.

Mr. CHILES. We are looking it up right this moment.

Senator FORD. Let me give it to you—somewhere between $9 and $10 billion additional to the consumer.

Mr. CHILES. We have it costing consumers from 1982 through 1995, not just 3 years.

Senator FORD. I have got it for 3 years.

Mr. CHILES. $46 billion for the 13 years.

Senator FORD. So for the next 3 years it will be somewhere between $9 and $10 billion?

Mr. CHILES. That number has a familiar ring, but I am not sure.

Senator FORD. I see your able assistant nodding yes, and I will take your able assistant's nod.

Senator JOHNSTON. That assumes a $35 per barrel oil price?

Mr. CHILES. Yes, sir, it does. It would be much lower if the world oil price went down.

Senator BUMPERS. If what?

Mr. CHILES. The price, the cost to the consumer would be much lower if the world——

Senator FORD. Are you telling me natural gas is going to be priced based on oil?

Mr. CHILES. It should be priced on oil substitutes.

Senator FORD. OK. What if I have a gas furnace in my home? I suppose what I am supposed to do is check oil prices every day to see what my bill is going to be at the end of the month?

Mr. CHILES. You don't have that option, sir.

Senator FORD. I've got gas, and whatever gas goes to, I am going to have to pay it.

Mr. CHILES. When you say—a person able to do that, sir, is in the industrial market where you do have even three fuel boilers where they can check the price of coal, oil, and natural gas to see in that instance what is the best bargain for him. That is why we say that is how the relative price of oil and gas should be determined.

Senator FORD. How much does it cost to convert a residential furnace from gas to oil or from oil to gas?

Mr. CHILES. About $800 to $1,000.

Senator FORD. If one price goes down, I spend $800 to convert?

Mr. CHILES. I wouldn't do that.

Senator FORD. Now you are getting practical. The DOE study cautioned against phasing in deregulation too quickly. You said that this increase is bad for the economy. The DOE bill had a 3-year phase in.

If we enact legislation in 1983 to begin accelerated deregulation in 1984, how long a phase-in period would be needed?

Mr. CHILES. You would have to look at that and see why, which way you wanted to play it. You could play it with 2 years.

Senator FORD. You sound like a lawyer. Ask him which way we should go and he says go either way, we can argue a good case.

How long a period should we have before, a phase-in period should we need?

Mr. CHILES. That is not the kind of question I can answer, sir. You have to look at the situation and decide what is best.

Senator FORD. Do you know what the situation is going to be?

Mr. CHILES. I have a very good idea.

Senator FORD. What is your very good idea?

Mr. CHILES. Between whenever we can start on this and 1985, we should have the price deregulated to a price where it will clear the market in 1985 without this big fly up that we see.

Senator FORD. We are talking about phased deregulation now, and that is an increase in the price of natural gas before 1985?

Mr. CHILES. That's right, sir.

Senator FORD. How long a phase-in period would be needed if we started the phase-in in 1983, started the increase?

Mr. **Chiles**. I think you could do it in 2 years if you have to. I think you ought to look at the situation and see if that is the best solution.

Senator **Ford**. Thank you, Mr. Chairman.

Senator **Nickles**. Senator Bumpers, do you have any questions?

Senator **Bumpers**. Erich, let me ask you, what is the national average of gas right now as of this moment?

Mr. **Evered**. Around $2 per thousand cubic feet or million Btu at the wellhead.

Senator **Bumpers**. It is more than that, isn't it? Closer to $2.40?

Mr. **Evered**. I don't believe so.

Senator **Bumpers**. You think the national average today, counting decontrolled gas, oil, and gas decontrol data, averages $2 an Mcf?

Mr. **Evered**. Are you talking about to the consumer or at the wellhead?

Senator **Bumpers**. The wellhead price.

Mr. **Evered**. About $2 per million Btu.

Senator **Bumpers**. What are you estimating it will be in 1985 immediately before roughly 50 percent of the gas in this country is decontrolled?

Mr. **Evered**. In December of 1984, in 1980 dollars, we are looking at over $3, maybe $3.50, or even $4.50 in 1984 dollars.

Senator **Bumpers**. I have heard this term fly up. One of your concerns is that the price is going to fly up in 1985 after this happens. Is this true?

Mr. **Evered**. Yes, sir.

Senator **Bumpers**. I am asking you the question, so we will be talking about the same thing, if it is $2 today, you are saying that it will be, could be as much as $4.50 in December of 1984?

Mr. **Evered**. In 1984 dollars.

Senator **Bumpers**. What about the following day?

Mr. **Evered**. Perhaps as much as $8.

Senator **Bumpers**. By decontrolling 50 percent of the gas, you think there would be a fly up of as much as three and a half?

Mr. **Evered**. Yes, sir.

Senator **Bumpers**. Did you hear Secretary Edwards yesterday talking about how much gasoline prices in this country have come down as a result of decontrol of oil?

Mr. **Evered**. Yes, I did.

Senator **Bumpers**. He also stated he would expect that to continue.

Why are you worried about a fly up if the price is going to continue to decline in oil?

Mr. **Evered**. Senator, the price of natural gas is set by the market. It is our judgment that the market will prescribe such a price in 1985 following decontrol. In addition, the situation in our judgment may be exacerbated by the contract provisions which provide for indefinite price escalation, and we see that as reinforcing the fly up.

Senator **Bumpers**. As of this very moment, the equivalent price of natural gas to equate to what utilities are paying for No. 6 oil is about $4.50 per thousand cubic feet. In other words, you are saying that the price of controlled gas in December of 1984 which will be roughly $4.50 would be right where No. 6 utility oil is today in Btu equivalent? Are you following me?

Mr. EVERED. Yes, sir.

Senator BUMPERS. If you decontrolled gas today, what do you think the price would go to?

Mr. EVERED. We have not done an in-depth study of where the price would go today.

Senator BUMPERS. What is decontrolled gas bringing for the most part today?

Mr. EVERED. Section 107 gas, the high-cost gas, is averaging in excess of $6 per thousand cubic feet.

Senator BUMPERS. Some of it is selling at as much as $9?

Mr. EVERED. Yes, but it is averaging just over $6.

Senator BUMPERS. It is averaging over $6. Some of those contracts have been in existence for some time. If you were to hit gas today, new gas below 15,000 feet, you could certainly command at least $9 per thousand cubic feet, couldn't you?

Mr. EVERED. No, sir, not necessarily; it depends upon the pipeline purchasers available, remoteness from the pipeline, and the current market situation for using the interstate pipelines.

Senator BUMPERS. Would it be fair to say if we decontrolled gas today that the price of all gas would go to at least the equivalent of No. 6 oil?

Mr. EVERED. Not as a cause and effect, no. It is possible that, as coincidence, the market price for gas could approach that level, but I am not prepared to say there is a linkage between the two, no, sir.

Senator BUMPERS. Forget the linkage. What would the price go to today, in your opinion?

Mr. EVERED. I will have to add the caveat that this is my personal opinion, not the findings of EIA in our study. My personal opinion would be that if all gas were deregulated today, the market clearing level would be somewhere in the $4 to $4.50 range.

Senator BUMPERS. Even without the linkage my assumptions are basically correct. Let's take the $4.50. That would mean a 2½-time increase. No; I'm sorry. That would be a 125-percent increase in the price of gas, right?

Mr. EVERED. Yes sir.

Senator JOHNSTON. Would the Senator yield? You have got that gas on contract, though. If you decontrol it, most of that would still be under contract.

Senator BUMPERS. I understand it is under contract. That is true, and that is a fair rebuttal to the point I am making, but as soon as those contracts expire, of course, the price is going to continue to escalate.

What percentage of gas would go up in the next 12 months? What percentage of the gas that is now being produced would go up in the next 12 months under total decontrol?

Mr. EVERED. I am not quite certain what the question is.

Senator BUMPERS. How many contracts, intra- or interstate, would expire in the next 12 months and be subject to renegotiation?

Mr. EVERED. Relatively few compared to the total number of contracts.

Senator BUMPERS. Why would you tell me the price of gas would go to $4.50?

Mr. EVERED. My response was couched in terms of a market clearing level, irrespective of contract restrictions.

Senator BUMPERS. Well, I have got a note here from the chairman.

Senator NICKLES. I thank the Senator. Senator Johnston, do you have any additional questions of this panelist?

Senator JOHNSTON. Not if you are going to hear from Mr. Butler.

Senator NICKLES. We might let our other people know when we go through the second round that we do intend to have Mr. Butler before this committee before lunch and to move right ahead and go through.

Senator JOHNSTON. If we are going to have him before lunch I am not asking any questions.

Senator WARNER. I will forfeit my questions also.

Senator BUMPERS. Before the gentlemen leave, if I may, I would ask this additional question. What is the administration's position on the announced policy of Chairman Butler about decontrolling administratively?

Mr. CHILES. Let me try that one, sir. We don't have a position per se at this moment. We don't believe that what he is doing is administratively trying to decontrol gas. We believe what he is doing is looking at the authorities that he has given the NGPA of 1978, and exercising them in the manner in which they are prescribed to find out what the just and reasonable prices of gas are. We are neither supportive or against what he is trying to do. We will look at the proceedings that he wishes to bring forward, and we will decide how it is that we will testify or not.

Senator BUMPERS. I don't have Mr. Butler's statement in front of me, but I have heard what I consider rather blatant statements on his behalf that he is going to try to accomplish as much as possible administratively, and the President, I don't have his precise statement either, but the President has been applauding this, and one of the justifications he uses for postponing is not the political implications of it, but that he believes FERC can essentially accomplish the same thing.

Mr. CHILES. I may be going too far. Maybe we should wait for Chairman Butler, but I believe——

Senator BUMPERS. I am not interested in what Chairman Butler thinks. I am interested in what the administration thinks about what Chairman Butler thinks.

Mr. CHILES. I am not privy to that, sir.

Senator JOHNSTON. They neither agree nor disagree. They simply say he is a great American.

Senator BUMPERS. One final question before you leave—there was a statement in answer to one of Senator Ford's questions that the average household cost of natural gas would go up. I forget what the timeframe was, in the next 3 years by $120.

Mr. CHILES. Under the NGPA, the national average cost will go up by $20 per year, in 1980 dollars.

Senator FORD. That is the low figure.

Senator BUMPERS. I can't believe you say that with a straight face, Mr. Chiles.

Mr. **Chiles**. In 1980 dollars, our forecast is that the differential or the increase for phased decontrol would be an increase of $40 to $80 per year for 4 years. Under the present provisions that we see of NGPA, of 1978, we see it going up approximately $20 for 3 years and jumping $170 in 1985 because of the fly up situation.

Senator **Bumpers**. How do you account for the fact that gas prices in my State are almost twice as much, and I am not talking about—we have a fairly cold winter, but they are up almost twice as much as they were in 1980. How do you account for that?

Mr. **Chiles**. We are willing to share with you our study. We looked at it on a regional basis, and we can show you region by region where the differentials are and different gas cushions regionally also have a lot to do with this.

Senator **Ford**. Could I inject here? They also gave $80, $40 to $80, and that is a pretty wide spread, and in order to make the fly up, to come out to offset the fly up, it has to be $80 that you estimate. So we are looking at $80 instead of $40, and $20 on the Natural Gas Pricing Act.

Mr. **Chiles**. Again, sir, it will vary by region.

Senator **Ford**. But the $80 is the national average in order to offset the fly up? The $380 is equal to the fly up you are projecting?

Mr. **Chiles**. It ranges by year whether it is $40 or $80 each year.

Senator **Ford**. If you take the $20 each year that you are estimating—I apologize to you, Dale—under the present law, plus the spike, the $170 that you are projecting, and you go back and take the $80, it has to be $80 if you follow the same criteria, and that gives you $240, and that equals the fly up, offsets your fly up.

Mr. **Chiles**. It averages $60 over the 4-year period from 1981 to 1985. That is total average of what, $240, and the fly up is $170, and $320 is $60.

Senator **Ford**. That makes $230. My $80 is right then, isn't it?

Mr. **Chiles**. It is just 4 years. It is 4 times 60.

Senator **Ford**. It is not 4 years. It is 3 years.

Mr. **Chiles**. You also have the 1985 year to take into consideration, sir, because that is when you have the $170 fly up.

Senator **Ford**. That is all at once. That is 1 day.

Mr. **Chiles**. One of those, and you have got three 20's.

Senator **Ford**. You have got 3 years and a day.

Mr. **Chiles**. No; I am talking annuals, annual numbers, sir. The study also started in 1982, sir.

Senator **Ford**. I am reading your figures, and now you are finally agreeing with me that I am reading your figures correctly.

Mr. **Chiles**. $40 and $80 average to $60. Sure.

Senator **Bumpers**. Let me ask, you are in charge of policy and planning and analysis. Now you are familiar with the President's stated goals as far as the Economic Recovery Act was concerned.

We are going to cut people's taxes, take those tax savings and save. We are going to invest. Everyone is going to produce more and we are going to create jobs, jobs, and more jobs.

Now I assume that you subscribe with that economic theory and I assume that is a matter that is not lost on policy planners in the Energy Department.

Mr. **Chiles**. Yes, sir.

Senator BUMPERS. I have figures here that indicate that a family of four with one wage earner making $20,000 a year, which is the median family income—half the people make more than that and half the people make less than that—just in 1984, assuming that the President's full 25-percent tax cut takes effect, which it will not. I can almost guarantee it will not, but assuming that it does, in 1984 according to the figures I have, the increased costs as a result of natural gas decontrol would be $430 direct costs, and their tax cut will be $464 in 1984, not counting inflation and increased social security taxes. Decontrol of natural gas alone would cost just $34 less than the total tax cut would give him in a year.

How do you square that with economic recovery?

Mr. CHILES. The first thing I would do would be to go back and see where those numbers came from.

[The information follows:]

Although we did not estimate the increase in costs for a family of four earning $20,000, we did estimate the average increase in gas costs to families that heat with gas. In our report, we estimated that in 1984, the average gas bill for these customers would be about $130 higher with our phased decontrol proposal than it would be with current policies. The $130 is in 1980 dollars. Using the administration's forecast of inflation, the increase would be about $150 in today's dollars, and $170 in 1984 dollars.

Senator BUMPERS. I will supply those to you. That is direct cost. Those same figures show the total cost, that is, the ripple effect of increased goods because industry in this country, many industries are highly natural gas intensive and the total cost, using the same illustration, in 1984, that that same family would pay $1,060 more for natural gas and all the goods and services, and they get the same $464 tax cut. The decontrolled gas would be more than twice as much as their tax cut, assuming the full tax cut goes into effect.

Does that make any economic sense to you if these figures are correct?

Mr. CHILES. I would be willing to look at the figures and come back to you, but I think it is unfair for me to try to comment without knowing where those figures came from. There are a lot of other factors involved that would mitigate on the other side of that issue I'm sure. However, I can say that our analysis would not support figures that high.

Senator BUMPERS. Do you think the present recession is caused in any degree by decontrol of oil prices?

Mr. CHILES. No, sir. In fact, when I looked at the forecast that we made 1 year ago, we forecast that the recession would be worse than it turned out to be, yet our oil import figures——

Senator BUMPERS. You are the first person from this administration I ever heard say that. Your leaders said consistently during 1980 until the depression really hit that there is going to be jobs, jobs, and more jobs.

Where were you hiding with this projection?

Mr. CHILES. Actually I worked for Westinghouse at the time. I should say, though, that the oil import figure, even given a worse recession than it turned out——

Senator FORD. You said that with a straight face, too. I like that.

Mr. CHILES. We actually forecast more oil imports than actually took place, so what that says is even though the recession wasn't as bad as we thought, the oil imports were even a better situation than we had calculated on the basis of a recession.

Senator BUMPERS. I won't take any more time.

Senator NICKLES. I thank the Senator, and gentlemen, we thank you for your statements before this committee. We would like to have you be responsive to members of the committee for additional written questions.

Senator JOHNSTON. Can I ask one quick question? Did I hear you endorse S. 2074?

Mr. CHILES. No, sir, you didn't.

Senator FORD. I have one quick question I want to ask of these two people. We find ourselves in the position of not setting the price of oil. Somebody else does that, but under deregulation of natural gas, we will find ourselves setting that price I suspect.

What is different, in where we are then, as it relates to the price of natural gas? Is still somebody else going to be setting the price of natural gas and we will not be able to do it?

Mr. EVERED. I would submit that we are presently finding that it is the market that is setting the price for oil, as OPEC is painfully learning, and with natural gas we will no doubt find the same.

Senator FORD. Let me ask you this. What if this country gets back into gear again and industry starts moving? Do you think oil prices will go up when we start needing several million more barrels per year?

Mr. EVERED. I think the market will firm up, yes, sir.

Senator FORD. Firm up or go up?

Mr. EVERED. In real terms, I do not see the price of oil rising for some time yet.

Senator FORD. What is real terms?

Mr. EVERED. Discounting inflation, for the next few years, EIA does not see the price of oil rising substantially.

Senator BUMPERS. You don't think the Saudis could tomorrow if they wanted to raise the price of oil in the world?

Mr. EVERED. My response is, I don't think they want to.

Senator BUMPERS. That is not the point. They are cutting production to 7 million barrels, and that is going to be roughly an 800,000 barrels a day reduction of today's supplies. You couple that say with an economic recovery in the United States, in Western Europe, you don't think that is going to push prices back up, or if the Saudis decide tomorrow they will lift 500 barrels, you don't think that is going to push the price back up?

Mr. EVERED. I do not see the price being pushed up dramatically in any reasonable scenario for the next few years.

Senator BUMPERS. It may not. My question doesn't deal with what may happen. I am just simply saying we are still right in the palm of OPEC's hands. They will dictate the world price of oil.

Mr. EVERED. The Senator is correct in that our vulnerability to a supply cutoff continues due to the structure of the world petroleum market.

Senator BUMPERS. Thank you.

Senator NICKLES. Gentlemen, we thank you for your statements today.

Our next guest which we have today is Mr. Mike Butler, Chairman of the Federal Energy Regulatory Commission. Mr. Butler, we welcome you before the committee again.

Mr. BUTLER. Thank you, Senator.

Senator NICKLES. We have received your statement. We will introduce it into the record, and you are free to proceed.

Mr. BUTLER. Thank you.

STATEMENT OF HON. C. M. BUTLER III, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION, DEPARTMENT OF ENERGY, ACCOMPANIED BY ROBERT C. MEANS, DIRECTOR, OFFICE OF REGULATORY ANALYSIS; AND CHARLES A. MOORE, GENERAL COUNSEL

Mr. BUTLER. Mr. Chairman, and members of the committee, I very much appreciate the opportunity to appear before the committee again to discuss natural gas issues arising under the Natural Gas Policy Act.

Before proceeding this morning, I would like to introduce today Mr. Robert Means, our Director of our Office of Regulatory Analysis, and Mr. Charles Moore who is our General Counsel. They have assisted me in the preparation of this testimony, and I have asked them to join me.

When I last appeared before the committee in November I provided a brief summary and analysis of some of the market ordering problems which appeared to be evolving under the Natural Gas Policy Act. At that time, much of the specific information required to assess the seriousness of those problems was still lacking.

Over the past few months, however, considerable additional information and analysis has been provided by the Energy Information Administration and the Office of Policy, Planning, and Analysis of the Department of Energy.

At the same time, however, the continued drop in world oil prices has injected further uncertainty into several issues. While additional work remains to be done in order to illuminate fully the evolving problems, a much clearer picture is nonetheless emerging. That picture is not encouraging. Despite the fact that the NGPA has been successful in many ways, major structural defects in the law are becoming apparent. The unintended consequences of these flaws, which have come to be known collectively as the market ordering problem, may eventually result in serious disordering of natural gas markets and consequent rippling disruption of the economy.

It is on that problem and its possible remedies that my statement focuses. While I have every intention of being as candid with you as I can concerning my opinions and the Commission's actions, I am precluded from discussing the merits of the pending rulemakings and adjudications in order to preserve the integrity of those proceedings. These would include the pending final rule concerning the establishment of an incentive price ceiling for natural gas produced in water depths greater than 300 feet. It also would include the pending notice of proposed rulemaking on onshore natural gas produced from depths between 10,000 and 15,000 feet.

There is considerable irony in the consequences of the Natural Gas Policy Act. The statute, providing for partial regulation of gas prices at the wellhead, was enacted in large part in response to problems caused by partial regulation of such prices. Under the Natural Gas Act, Federal price controls applied to the sale of natural gas in interstate commerce but did not extend to the sale of natural gas sold and consumed within the State in which it was produced. The result of this distinction during the 1970's was the coexistence of severe curtailments in the interstate market with ample supplies in the intrastate markets.

The primary flaw in the Natural Gas Policy Act, as I stated in November, is that rather than eliminating the dual market which existed under the Natural Gas Act, the NGPA merely substituted another dual market in its place, thereby creating a host of novel economic distortions. The problems created by the NGPA's regime of partial regulation are evident in the supply problems of some pipelines as well as in the higher than commodity value prices being paid for deregulated gas. These problems promise to be aggravated dramatically when the amount of deregulated gas increases from less than 5 percent of total supplies this year to about 60 percent in 1985.

The dual market created by the NGPA finds its source in the act's regulation of some prices but not others. Other structural aspects of the NGPA interact with this one to create higher than commodity value prices and a serious risk or regional shortages.

First, the amount of gas that will be regulated until exhausted is significant.

Second, the NGPA provides for a range of widely varying prices.

Third, the NGPA ties the escalations of gas prices to a seriously understated assumption at least at present about the price of oil.

Finally, the NGPA at least permits, if not prescribes, so-called rolled-in pricing with only insignificant limits. Taken together, these factors yield widely varying average gas costs among pipelines, both interstate and intrastate. These facts are crucial to an understanding of the market ordering problem.

Partial regulation under the Natural Gas Act was geographical in nature in the sense that field sales to the interstate market were regulated while such sales within the intrastate market were not. Within each market, however, regulation was either complete or nonexistent. There was no market within which regulation coexisted with deregulation. The NGPA largely eliminated the legal distinction between interstate and intrastate markets for natural gas. In fact, I believe it intended to eliminate that distinction in its entirety.

Through that statute, however, Congress adopted a new form of partial regulation which combined regulated and deregulated supplies. Under the NGPA on January 1, 1985, deregulation of more than half the supply of natural gas will coexist in the same market with continued price controls on the remaining supply.

In order to understand how this state of affairs will affect gas prices paid by consumers, it is useful to simplify the multiple pricing categories of NGPA and focus on just three prices—the average price for controlled gas, the average price for decontrolled gas, and the rolled-in average price of all gas.

Controlled gas presently accounts for around 96 percent of domestic supplies. This share will drop to less than 50 percent after midnight on December 31, 1984. Decontrolled gas is presently comprised primarily of natural gas produced from below 15,000 feet. That is around 4 percent of today's supply. After 1984, however, large volumes of gas under NGPA sections 102, 103, 105, and 106(b) will be deregulated, lifting the share of decontrolled gas to as much as 60 percent of supply.

At present, the average price of supplies of deregulated gas is approximately $6.56 per thousand cubic feet. Now although purchasing pipelines face a very broad range of prices ranging from a low of around 26 cents per MMBtu to over $10 per million Btu, each pipeline averages or rolls in the price of gas sold under each discrete contract so that each pipeline's resale price to its customers reflects only the weighted average cost of gas plus, of course, a transportation cost component. Each pipeline, whether interstate or intrastate, will have its own supply mix resulting in its particular average cost of gas.

I stop here to emphasize that the commodity gas price passed on to the gas consumer is based on this weighted average cost of gas. Accordingly, what matters to the consumer is the average price of gas, not the components of controlled or decontrolled gas which lie behind the average. I have over here a chart which I hope is visible to the members of the committee.

Figure 1 in the chart illustrates this point. Let me move over to the chart. That is, the figure represented at this point in the far left-hand side of the chart. In 1982, the average price of controlled gas is projected to be $2.07, while the average price of decontrolled gas represented by this red line is over $6.56, but since decontrolled gas accounts for only 3 to 4 percent of supply, the rolled-in average price of gas is about $2.27 which is reflected in this block.

If no changes are made in the NGPA, the rolled-in average price is projected to rise to around $2.61 in 1984. This increase results from an increase in the average price of controlled gas represented here to $2.28, and an increase in the decontrolled price to $6.93 represented by the red line above. The following year, however, large volumes of gas are deregulated, and a striking phenomenon is projected to occur. The price of remaining volumes of controlled gas drops sharply, you can see here, to $2.06 per thousand cubic feet, as does the price of decontrolled gas. The rolled-in average price, however, the only price which the consumer pays, leaps nearly $2 to around $4.45 per thousand cubic feet represented at that point. At that time, as you may note on the chart, the rolled-in average price has nearly reached estimated market clearing levels equivalent to approximately 70 percent of the price of crude oil.

How is it that a drop of over 20 cents in the price of controlled gas is associated with an increase of nearly $2 in the rolled-in average price to be paid by the consumer? There is no slight of hand here, for the volume of gas remaining subject to controls has fallen from over 90 percent of supply to less than half that much and the consequences are affected by differences in the weighting of the averages. Large volumes will have been deregulated pursuant to section 121 of the NGPA and their price will have risen above the

Btu equivalent price of alternate fuel, thereby pulling up the rolled-in average price of gas.

A key assumption which underlies these projections is the world price of crude oil. The current world oil market has been characterized by a softening of demand and more than adequate supply, but it is unclear whether or for how long this trend will continue. If oil prices dropped to a range reasonably close to the price predicted by Congress in 1978, the transition to decontrol in 1985 could be relatively smooth. However, a great deal of world oil production is located in or adjacent to areas of considerable political instability and conflict. That, obviously, is at the heart of the volatility in oil prices the world has experienced since the early 1970's. Political or other instability in significant producing regions could again cause rapid increases in world oil prices as well as limited availability of oil.

Moreover, the most recent EIA data on refiner acquisition cost still reflects a crude oil price of over $34 per barrel. Hence, while recognizing the importance of closely monitoring the oil markets, I believe we may have no real choice for planning purposes but to assume that oil prices will remain relatively close to present levels, or worse, increase. Figure 1 illustrates the uncertainty of future oil prices in a shaded area reflecting a spread of oil prices 15 percent above and 15 percent below DOE's specific projections.

Once oil equivalent price levels are reached in 1985, gas markets would be in rough supply/demand equilibrium. This means that an increase in the price of natural gas could cause marginal fuel users to switch from gas to an alternate fuel, probably No. 6 fuel oil in most cases. Under these circumstances, the pipeline companies' ability in the aggregate to purchase natural gas supplies will be constrained by their ability to market their gas supplies in competition with available alternate fuels. Accordingly, once the average price has risen to market clearing levels, gas purchasers in the aggregate will be willing to pay no more for natural gas than an amount equal to the average price of all gas multiplied by the supply. This would then represent the gross amount which consumers would pay and producing interests would receive for natural gas in 1985 if no changes are made in the Natural Gas Policy Act.

In this equilibrium situation, price movements in one component column tend to cause an equivalent opposite reaction in the other component, while leaving the average price essentially flat. Thus, a decrease in the average price of controlled gas would lead to an increase in the amount sellers of decontrolled gas were able to demand. Because pipeline purchasers would still be able to market the same total supply purchased at the same average price, they would be economically able to pay such higher prices for the decontrolled gas up to the point where their average price paid for gas supplies is again at the equilibrium level. The commodity price of gas to be passed on to the consumer would then be essentially the same as before the decrease in the controlled prices.

Conversely, an increase in the price of controlled gas would likely result in a decrease in the price of decontrolled gas as pipelines would negotiate those prices down. This would be portrayed on the chart as a rise in the left-hand column, and a corresponding decline in the middle column. The right-hand column, reflecting the average price, would remain unchanged.

Before continuing here I would like to point out that a great deal of the difficulty in dealing with these questions from an analytical standpoint is, as you can see by what I have presented to you so far, first, that the problems are extraordinarily complex to deal with. They are very technical in nature.

Second, the answers to those problems, apparent problems, appear to be themselves counterintuitive. It is not easy to make people understand that by raising some prices you depress others. Thus the chart reflects three important prospects for the likely behavior of the natural gas market under the NGPA.

First, assuming that world oil prices remain approximately at present levels, the nationwide rolled-in average price of natural gas passed on to consumers will increase sharply in 1985.

Second, the level to which this price will rise is set by the competition of gas with other fuels. I will return to these two points in a moment.

Third, however, the chart also tells us that the consumer appears not to receive a direct benefit from the continuation of price controls on a portion of supply after 1985. Instead, the price of decontrolled supplies is bid up above market clearing levels until the average price of all gas supplies reaches market clearing levels. The increased amount of money paid in excess of market clearing levels as is illustrated by the red colored area on the chart becomes increasingly large as 1985 approaches.

In short, the economic benefit of retaining controls on some gas is not passed on to natural gas purchasers but is effectively transferred to sellers of, to the producers of deregulated supplies. In a sense, such partial decontrol can be viewed as a tax imposed on sellers of controlled gas to provide a subsidy to sellers of decontrolled gas. Natural gas consumers could benefit indirectly from the state of affairs if the subsidy for decontrolled gas resulted in increased production. Whether or not society as a whole would benefit would depend on whether the benefits made available through the subsidy outweigh the costs to society in terms of, (1) misallocation of resources from other investment opportunities and, (2) probable resulting regional dislocations.

The preceding analysis understates the complexities and distortions which are expected to arise from partial decontrol. For example, it is distinctly possible as some observers have argued that the rolled-in average price of gas will rise for some period of time in a price spike in excess of long-term market clearing levels. This phenomenon is said to be attributable to the prevalence of indefinite price escalator clauses tied to oil prices. A recent tentative survey of gas purchase contracts on file with the FERC indicates that while such oil-based escalator provisions are far from common, their effect could be magnified by the fact that over two-thirds of the contracts surveyed contained most-favored-nation clauses or other deregulation-type provisions. A surprisingly small number of the contracts surveyed contain buyer protection or so-called market-out provisions allowing the purchasing pipeline to escape from the otherwise applicable contract price if, for example, the gas cannot be marketed.

There is considerable uncertainty at present concerning the scope and full implications of these various types of contractual provisions. It is my understanding that EIA is nearing completion of a more detailed review of gas purchase contracts which may shed more light on this subject. If it appears that a prevalence of such pricing provisions does pose a serious risk of producing a price spike in 1985 of these dimensions, the question of remedial action must be addressed well in advance of 1985.

While the ability of the Commission to deal with the problem seems limited, the urgency of the situation as 1985 approaches may impel the Commission to address the problem as best it can. I must tell you flatly that comprehensive congressional action would be a far preferable course. The Commission's authority is limited, but Congress authority is plenary.

An additional source of complexity results from the fact that the averages I have used today are nationwide aggregate figures. Behind them lie large, interregional, and interpipeline disparities. Moreover, it appears increasingly clear that some interstate pipelines control a larger share of price controlled gas than other interstate pipelines and most intrastate pipelines. The uneven distribution of this cushion of low-priced gas will continue to be unevenly distributed in the future absent legislative or administrative remedy.

The amount of gas controlled by a given pipeline in each of these pricing categories is idiosyncratic in the sense that it depends upon each pipeline's historical and present management and buying practices. Since each pipeline will control different quantities of gas under the various pricing categories, the weighted average cost of each pipeline's supplies is unique or will coincide with the weighted average cost of another pipeline's supplies only as a matter of chance.

A useful way to view this phenomenon is that the relative richness or poorness of each pipeline, whether interstate or intrastate, will be reflected respectively and inversely to the lowness or highness of its weighted average gas cost. That lowness or highness is in turn directly dependent upon the share of the regulated gas cushion controlled under contract by each individual pipeline. The consequences of this development under the NGPA will be examined in detail at a point further on in this testimony.

There appears to be relentless competition among pipelines for natural gas supplies. This competition is also apparently a major factor in the very high prices paid for the small amount of deregulated gas today. Logically, natural gas pipelines should prefer to buy gas as cheaply as possible because they should be concerned with the preservation of existing markets, and they cannot profit from the sale of gas but only from its transportation.

However, competition among them in a seller's market makes cheap prices improbable. Because many pipelines can average high prices with low prices under the regime of the NGPA, the pipelines can be expected to bid unregulated wellhead prices up even above long-term market clearing levels to a point where each pipeline's management decides in the exercise of its business judgment that it must desist from further bidding. Furthermore, such institutional impulsions as reserve life indices and pipeline indentures may also be significant factors in the matrix of pipeline choices.

The theoretical bid ceiling for any pipeline is established by the ability of it and its distribution company customers to market natural gas to buyers of significant volumes at the margin. This is a key point to understanding the apparent paradox and how you depress some prices by raising others. By and large, it is assumed that the marginal customers are large, industrial concerns who use gas as boiler fuel. That marginal use has been estimated as one-third of the aggregate natural gas market.

It is also believed that a large percentage of such customers have fuel-switching capability and that the alternative fuel is low-sulfur No. 6 fuel oil. Of course, the marginal users on any particular pipeline may vary, but there is strong evidence that marginal customers are boiler fuel users on average. This suggests that the limit to which pipelines can bid their average or rolled in gas cost is on average somewhat below the Btu equivalent price of low-sulfur No. 6 fuel oil, less transportation costs. This implies that pipelines will continue to pay prices higher than commodity value until their weighted average gas costs approach market clearing levels.

The consequence is that even if world oil prices are as low as $25 per barrel, the increase in the average price of natural gas in 1985 is likely tc be both large and sudden. The NGPA was intended to achieve a smooth transition to decontrol by retaining controls on some gas after 1985 and by applying an annual escalator to the statutory price ceilings before that date.

However, given market events since passage of the NGPA, continued price controls on some categories of natural gas will do little, if anything, to smooth the transition. The price escalator provisions applicable to those categories will be largely ineffective to raise prices to oil-equivalent levels because the rates of escalation were based on the world oil market in 1977 and 1978. Within months after enactment of the NGPA, however, world oil prices more than doubled. Since 1979, oil prices have remained generally stable or even declined somewhat.

However, even without further increases, existing oil prices imply a price for either completely or partially deregulated natural gas that is far above the NGPA's statutory price ceilings. Because the NGPA will cause this price flyup, the transition to decontrol scheduled for 1985 is likely to be far from smooth.

Our analysis also tends to show that partial deregulation in 1985 may have severe regional impacts.

Senator Johnston. Excuse me. May I interrupt to ask what the Chair's plans are with respect to questioning and hours?

Senator Nickles. Might I ask, Mr. Butler, if he might summarize briefly because it is my intention to conclude our questions of Mr. Butler immediately upon his finishing his statement.

Senator Johnston. I might say I am going to have to leave. I apologize to Mr. Butler for that, but I am hosting a lunch that started at 12 o'clock, so I congratulate you on a fine statement.

Mr. Butler. Thank you, Senator Johnston.

Senator Metzenbaum. I didn't understand what you said.

Senator Nickles. I am requesting Mr. Butler if he could, to summarize his statement so we can begin our questioning.

Mr. **Butler**. The remainder of the statement simply completes our analysis of the market-ordering problem, and it does suggest to you that there are some possible actions that the Commission might take under statute in the event further studies indicate that is warranted. That might, in some respect, mitigate the anticipated difficulties. I think what I will do is simply conclude at this point.

[The prepared statement of Mr. Butler follows:]

STATEMENT OF
C. M. BUTLER, III
CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

March 22, 1982

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I very much appreciate the opportunity to appear before this Committee again to discuss natural gas issues arising under the Natural Gas Policy Act (NGPA). Before proceeding this morning, I would like to introduce Dr. Robert C. Means, Director of the Office of Regulatory Analysis and Mr. Charles A. Moore, General Counsel. As they have assisted me in the preparation of my testimony I have asked them to accompany me today.

When I last appeared before the Committee in November, I provided a brief summary and analysis of some of the market-ordering problems which appeared to be evolving under the NGPA. At that time, much of the specific information required to assess the seriousness of those problems was still lacking. Over the past few months, considerable additional information and analysis has been provided by the Energy Information Administration (EIA) and the Office of Policy, Planning and Analysis of the Department of Energy (OPPA). At the same time, however, the continued drop in world oil prices has injected further uncertainty into several issues. While additional work remains to be done in order to illuminate fully the evolving problems, a much clearer picture is nonetheless emerging. That picture is not encouraging.

Despite the fact that the NGPA has been successful in many ways, major structural defects in the law are becoming apparent. The unintended consequences of these flaws, which have come to be known collectively as the "market ordering problem," may eventually result in serious disordering of natural gas markets and consequent rippling disruption of the economy. It is on this problem and its possible remedies that my statement focuses. While I have every intention of being as candid with you as I can concerning my opinions and the Commission's actions, I am precluded from discussing the merits of pending rulemakings and adjudications in order to preserve the integrity of those proceedings. 1/ These would include the pending final rule concerning the establishment of an incentive price ceiling for natural gas produced in water depths greater than approximately 300 feet. It would also include the pending notice of proposed rulemaking on onshore natural gas produced from depths between 10,000 and 15,000 feet.

There is considerable irony in the consequences of the NGPA. The statute, providing for partial regulation of gas prices at the wellhead, was enacted in large part in response to problems caused by partial regulation of such prices. Under the Natural Gas Act (NGA), federal price controls applied to the sale of natural gas in interstate commerce, but did not extend to the sale of natural gas sold and consumed within

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1/ See, Pillsbury Co. v. F.T.C., 354 F.2d 952 (5th Cir. 1966); Consumer Energy Council of America v. FERC (D.C. Cir., Nos. 80-2184, 80-2312, January 29, 1982).

the state in which it was produced. The result of this distinction during the 1970's was the coexistence of severe curtailments in the interstate market with ample supplies in the intrastate markets.

The primary flaw in the NGPA, as I stated in November, is that, rather than eliminating the dual market which existed under the NGA, the NGPA merely substituted another dual market in its place, thereby creating a host of novel economic distortions. The problems created by the NGPA's regime of partial regulation are evident in the supply problems of some pipelines, as well as in the higher than commodity-value prices being paid for deregulated gas. These problems promise to be aggravated dramatically when the amount of deregulated gas increases from less than 5 percent of total supplies this year to about 60 percent in 1985. 2/

The dual market created by the NGPA finds its source in the Act's regulation of some prices, but not others. Other structural aspects of the NGPA interact with this one to create higher than commodity-value prices and a serious risk

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2/ See e.g., Department of Energy, Office of Policy, Planning and Analysis, A Study of Alternatives to the Natural Gas Policy Act of 1978. (November 1981) (hereinafter cited as DOE Study) at 3. Throughout this testimony, references will be made to a variety of current studies and analyses of natural gas issues. Differences in data sources, methodology and assumptions lead to different numerical estimates and projections in many of the studies. The uncertainty of future oil price movements is a further complicating factor. The only alternative to relying upon the best available numerical information, however, is to avoid entirely attempts to define and quantify future developments in natural gas pricing and supply. That alternative is, of course, unacceptable.

of regional shortages. 3/ First, the amount of gas that will be regulated until exhausted is significant. 4/ Second, the NGPA provides for a range of widely varying prices. 5/ Third, the NGPA ties the escalations of gas prices to a seriously understated assumption about the price of oil. 6/ Finally, the NGPA at least permits, if not prescribes, so-called rolled-in pricing with only insignificant limits. 7/ Taken together, these factors yield widely varying average gas costs among pipelines, both interstate and intrastate. 8/ This fact is crucial to an understanding of the market-ordering problem.

3/ DOE Study, supra, at 7-8. The reserve to production ratios of intrastate pipelines also appear to be declining more rapidly than for interstate pipelines, especially in Texas and Louisiana markets. See Energy Information Administration, The Current State of the Natural Gas Markets, An Analysis of the Natural Gas Policy Act and Several Alternatives (hereinafter cited as EIA Analysis) Part I (December 1981) at 37, 40. See especially Table 8. The possibility of renewed shortages and curtailment has also been recognized by the EIA in its Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Pricing (August 1981) at 17-22. Earlier testimony before this Committee corroborates this possibility. See Oversight Hearings on Title I of the Natural Gas Policy Act of 1978 Before the Senate Committee on Energy and Natural Resources, 97th Cong., 1st Sess. (November 6, 1981) (statement of Robert L. Mitchell at 4; statement of Donald R. Willis at 2, 3, 6).

4/ DOE Study, supra note 1, at 7.

5/ There are 28 separate price ceilings under that statute, and many different contract prices within those.

6/ Oil products were considered to be the alternative fuels to natural gas, so escalations were pegged to the price of crude oil. When Congress passed the NGPA, that price was expected to be about $19 per barrel in 1985. See H.R. Rep. No. 95-543, 95th Cong., 1st Sess., Vol. II at 417. However, the price is much higher than that figure now.

7/ See Order No. 167, Incremental Pricing: Adoption of Single-Tier Alternative Fuel Price Ceiling, Docket No. RM81-27 (issued July 24, 1981) (Concurring Statement of Chairman C. M. Butler III).

8/ EIA Analysis, supra, at 65-69.

Partial regulation under the NGA was geographical in nature in the sense that field sales to the interstate market were regulated, while such sales within the intrastate market were not. Within each market, however, regulation was either complete or nonexistent. There was no market within which regulation coexisted with deregulation. The NGPA largely eliminated the legal distinction between interstate and intrastate markets for natural gas. Through that statute, however, Congress adopted a new form of partial regulation which combined regulated and deregulated supplies. Under the NGPA, on January 1, 1985, deregulation of more than half the supply of natural gas will coexist in the same market with continued price controls on the remaining supply.

In order to understand how this state of affairs will affect gas prices paid by consumers, it is useful to simplify the multiple pricing categories of the NGPA and focus on just three prices: the average price for controlled gas; the average price for decontrolled gas; and the rolled-in average price of all gas. Controlled gas presently accounts for around 96 percent of domestic supply. 9/ This share will drop to less than 50 percent of supply after midnight on December 31, 1984. 10/

9/ EIA Analysis, supra, at 49 and 51 (Tables 11 and 12).

10/ Id.

Decontrolled gas is presently comprised primarily of natural gas produced from below 15,000 feet, around 4 percent of today's supply. 11/ After 1984, however, large volumes of gas under NGPA sections 102, 103, 105 and 106(b) will be deregulated, lifting the share of decontrolled gas to as much as 60 percent of supply. At present, the average price of supplies of deregulated gas is approximately $6.56 per Mcf. 12/

Now, although purchasing pipelines face a very broad range of prices ranging from a low of around $0.26 per MMBtu to over $10.00 per MMBtu, each pipeline averages (or "rolls-in") the price of the gas sold under each discrete contract so that each pipeline's resale price to its customers reflects only the weighted average cost of gas, plus, of course, a transportation cost component. Each pipeline, whether interstate or intrastate, will have its own supply "mix," resulting in its particular average cost of gas.

I stop here to emphasize that the commodity gas price passed on to the gas consumer is based on this weighted average cost of gas. Accordingly, what matters to the consumer is the average price of gas, not the components of controlled and decontrolled gas which lie behind the average.

11/ Id. In addition, small amounts of other section 107 categories, such as Devonian shale gas, are also deregulated.

12/ DOE Study, supra, at 9 (Table I).

Figure I illustrates this point. In 1982, the average price of controlled gas is projected to be $2.07 13/ while the average price of decontrolled gas is over $6.56. But since decontrolled gas accounts for only about 3-4 percent of supply, the rolled-in average price of the gas is $2.27, only a little higher than the controlled gas price.

If no changes are made in the NGPA, the rolled-in average price is projected to rise to around $2.61 in 1984. 14/ This increase results from an increase in the average price of controlled gas to $2.28 and an increase in the decontrolled price to $6.93.

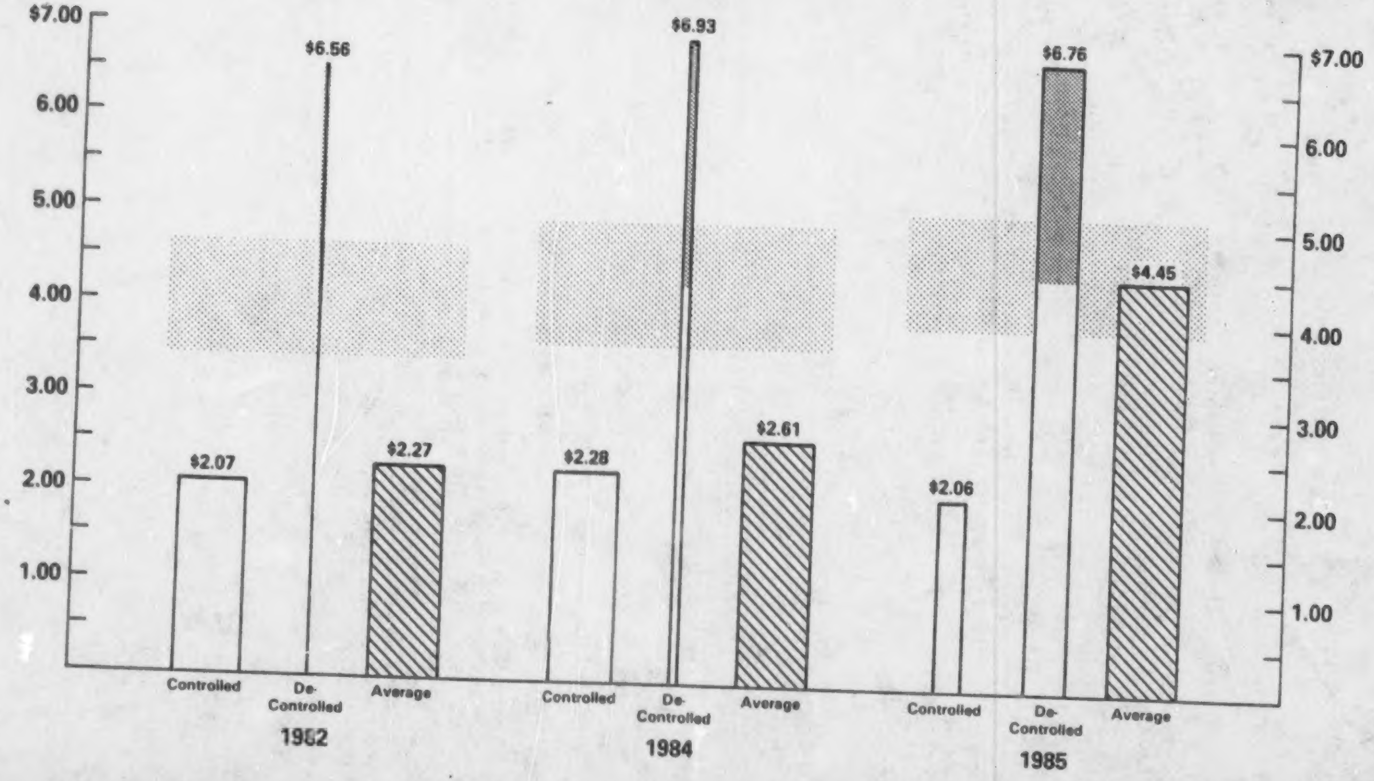
The following year, however, large volumes of gas are deregulated and a striking phenomenon is projected to occur. The price of the remaining volumes of controlled gas drops sharply (to $2.06 per Mcf) as does the price of decontrolled gas. The rolled-in average price, however, the only price which the consumer pays, leaps nearly two dollars to around $4.45 per Mcf. 15/ At that time, as you may note on the chart, the rolled-in average price has nearly reached estimated market-clearing levels, equivalent to approximately 70 percent of the price of crude oil.

13/ As indicated on the notes to Figure I, the estimates for controlled, decontrolled and average gas prices are taken or derived from the DOE Study, supra.

14/ Id.

15/ Id.

Figure I
Projected Field Prices for Natural Gas Under NGPA
($1980/Mcf)



Supporting Data

FIGURE I

	Controlled Price 1/	Decontrolled Price 3/	Average Price 4/	70.9% of Crude Oil 5/	Plus 15%	Minus 15%
1982	2.07 2/	6.56	2.27	4.07	4.68	3.48
1984	2.28	6.93	2.61	4.31	4.96	3.66
1985	2.06	6.76	4.45	4.45	5.12	2.78

All figures in 1980 dollars per Mcf of gas. Prices include severance tax and section 110 add-ons.

1/ DOE, Office of Policy, Planning and Analysis, A Study of Alternatives to the Natural Gas Policy Act of 1978 (November 1981), Appendix A, at A-70 (Figure IV-5) (for 1984 and 1985).

2/ Derived from DOE Study, supra, Appendix A at A-73 (Figure IV-8).

3/ DOE Study, supra, at 9 (Table I).

4/ DOE Study, supra, Appendix A, at A-73 (Figure IV-8).

5/ Crude oil price projections, representing average refiner acquisition cost of crude oil, are from DOE Study, supra, at 9 (Table I). They range from $32.73 per barrel in 1982 to $35.76 per barrel in 1985 (both figures in 1980 dollars). The most recent EIA data on present refiner acquisition cost for December 1981 shows a price of $34.26. EIA, Weekly Petroleum Status Report (March 12, 1982) at 25.

How is it that a drop of over 20 cents in the price of controlled gas is associated with an increase of nearly $2.00 in the rolled-in average price to be paid by the consumer? 16/ There is no sleight-of-hand here, for the volume of gas remaining subject to controls has fallen from over 90 percent of supply 17/ to less than half as much, and the consequences are affected by differences in the weighting of the averages. Large volumes will have been deregulated pursuant to section 121 of the NGPA and their price will have risen above the Btu-equivalent price of alternate fuel, thereby pulling up the rolled-in average price.

A key assumption which underlies these projections is the world price for crude oil. The current world oil market has been characterized by a softening of demand and more than adequate supply, but it is unclear whether or for as long as this trend will continue. If oil prices dropped to a range reasonably close to the price predicted by Congress in 1978, the transition to decontrol in 1985 could be relatively smooth. However, a great deal of world oil production is located in or adjacent to areas of considerable political

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16/ As emphasized below, these projections deal with aggregate figures only. The actual average acquisition costs of individual pipelines are expected to vary greatly.

17/ EIA Analysis, supra, at 50.

instability and conflict. That, obviously, is at the heart of the volatility in oil prices the world has experienced since the early 1970's. Political or other instability in significant producing regions could again cause rapid increases in world oil prices, as well as limited availability of oil. Moreover, the most recent EIA data on refiner acquisition cost still reflects a crude oil price of over $34 per barrel. 18/ Hence, while recognizing the importance of closely monitoring the oil markets, I believe we may have no real choice for planning purposes but to assume that oil prices will remain relatively close to present levels, or worse, increase. Figure I illustrates the uncertainty of future oil prices in a shaded area reflecting a spread of oil prices 15 percent above and 15 percent below DOE's specific projections.

Once oil-equivalent price levels are reached in 1985, gas markets would be in rough supply/demand equilibrium. This means that an increase in the price of natural gas could cause marginal gas users to switch from gas to an alternate fuel, probably No. 6 fuel oil in most cases. Under these circumstances, the pipeline companies' ability, in the aggregate, to purchase natural gas supplies will be constrained by their ability to market their gas supplies in competition with available alternate fuels. Accordingly, once the average

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18/ EIA Weekly Petroleum, *supra*, at 25. The figure reflects average refiner acquisition cost of crude oil by domestic refiners for December 1981.

price has risen to market-clearing levels, gas purchasers, in the aggregate, will be willing to pay no more for natural gas than an amount equal to the average price of all gas multiplied by the supply. This would then represent the gross amount which consumers would pay and producing interests would receive for natural gas in 1985 if no changes are made in the NGPA.

In this equilibrium situation, price movements in one component column tend to cause an equivalent opposite reaction in the other component, while leaving the average price essentially flat. 19/ Thus, a decrease in the average price of controlled gas would lead to an increase in the amount sellers of decontrolled gas were able to demand. Because pipeline purchasers would still be able to market the same total supply purchased at the same average price, they would be able economically to pay such higher prices for the decontrolled gas up to the point where their average price paid for gas supplies is again at the equilibrium level. The commodity price of the gas to be passed on to the consumer would then be essentially the same as before the decrease in controlled prices.

Conversely, an increase in the price of controlled gas would likely result in a decrease in the price of decontrolled gas as pipelines would negotiate those prices down. This would

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19/ See e.g., DOE Study, supra, at 20.

be portrayed on the chart as a rise in the left-hand column and a corresponding decline in the middle column. The right-hand column reflecting the average price would remain unchanged.

Thus, the chart reflects three important prospects for the likely behavior of the natural gas markets under the NGPA. First, assuming that world oil prices remain approximately at present levels, the nationwide, rolled-in average natural gas price passed on to consumers will increase sharply in 1985. Second, the level to which this price will rise is set by the competition of gas with other fuels. I will return to these two points in a moment.

Third, however, the chart also tells us that the consumer appears not to receive a direct benefit from the continuation of price controls on a portion of supply after 1985. Instead, the price of decontrolled supplies is bid up above market-clearing levels until the average price of all gas supplies reaches market-clearing levels. The increased amount of money paid in excess of market levels is illustrated by the red-colored area on the chart, which becomes increasingly large as 1985 approaches. In short, the economic benefit of retaining controls on some gas is not passed on to natural gas purchasers but is effectively transferred to sellers of deregulated supplies. In a sense, such partial decontrol can be viewed as a tax imposed on sellers of controlled gas to provide a subsidy to sellers of decontrolled gas. Natural gas consumers could benefit indirectly from this state of affairs if the subsidy for decontrolled gas resulted in increased production. 20/ Whether or not society as a whole would benefit would depend on whether the benefits made available through the subsidy outweigh the costs to society in terms of (i) misallocation of resources from other investment opportunities, and (ii) probable resulting regional dislocations. 21/

The preceding analysis understates the complexities and distortions which are expected to arise from partial decontrol. For example, it is distinctly possible, as some observers have argued, that the rolled-in average price of gas will rise for some period of time in a price "spike" in excess of long-term market-clearing levels. This phenomenon is said to be attributable to the prevalence of indefinite price escalator clauses tied to oil prices. A recent tentative survey 22/ of gas purchase contracts on file with the FERC indicates that while such oil-based escalator provisions are far from common, their effect could be magnified by the fact that over two-thirds of the contracts surveyed contained "most favored nation" clauses or other deregulation-type provisions. A surprisingly small number of the contracts surveyed contain buyer protection or so-called "market out"

20/ This possibility is reflected in various studies. See e.g., DOE Study, supra, at 20.

21/ The Department of Energy's analysts have concluded that they would not. Id. at 23-25.

22/ EIA Analysis, supra, at 71-82.

provisions allowing the purchasing pipeline to escape from the otherwise applicable contract price if, for example, the gas cannot be marketed. 23/

There is considerable uncertainty at present concerning the scope and full implications of these various types of contractual provisions. It is my understanding that EIA is nearing completion of a more detailed review of gas purchase contracts which may shed more light on this subject.

If it appears that the prevalence of such pricing provisions does pose a serious risk of producing a price spike in 1985 of these dimensions, the question of remedial action must be addressed well in advance of 1985. While the ability of the Commission to deal with the problem seems limited, the urgency of the situation as 1985 approaches may impell the Commission to address the problem as best it can. 24/ I must tell you flatly that comprehensive congressional action would be a far preferable course. The Commission's authority is limited, but Congress' is plenary.

An additional source of complexity results from the fact that the averages I have used today are nationwide aggregate

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23/ Id. at 80.

24/ Staff has been asked to review this question. A number of parties have already urged the Commission to take some sort of action on this point. See e.g., Petition of Process Gas Consumers, et al., Docket No. RM82-17 (filed March 1, 1982) (urging Commission to require renegotiation of some pricing provisions as a condition to obtaining higher prices).

figures. Behind them lie large inter-regional and inter-pipeline disparities. Moreover, it appears increasingly clear that some interstate pipelines control a larger share of price-controlled gas than other interstate pipelines and most intrastate pipelines. 25/ The uneven distribution of this "cushion" of low-priced gas will continue to be unevenly distributed in the future, absent legislative or administrative remedy.

The amount of gas controlled by a given pipeline in each of these pricing categories is idiosyncratic in the sense that it depends upon each pipeline's historical and present management and buying practices. Since each pipeline will control different quantities of gas under the various pricing categories, the weighted average cost of each pipeline's supplies is unique or will coincide with the weighted average cost of another pipeline's supplies only as a matter of chance.

A useful way to view this phenomenon is that the relative "richness" or "poorness" of each pipeline, whether interstate or intrastate, will be reflected respectively and inversely in the lowness or highness of its weighted average gas cost. That lowness or highness is in turn directly dependent on the share of the regulated gas cushion controlled under contract by each individual pipeline. 26/ The consequences

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25/ EIA Analysis, supra, at 48.

26/ EIA Analysis, supra, at 65-68.

of this development under the NGPA will be examined in detail below.

There appears to be relentless competition among pipelines for natural gas supplies. 27/ This competition is also apparently a major factor in the very high prices paid for the small supply of deregulated gas today. Logically, natural gas pipelines should prefer to buy gas as cheaply as possible because they should be concerned with the preservation of existing markets and they cannot profit from the sale of gas, but only its transportation. However, competition among them in a seller's market makes cheap prices improbable. Because many pipelines can average high prices with low prices under the regime of the NGPA, pipelines can be expected to bid unregulated wellhead prices up, even above long-term market-clearing levels, to a point where each pipeline's management decides, in the exercise of its business judgment, that it must desist from further bidding. Furthermore, such institutional impulsions as reserve life indices and pipeline indentures may also be significant functions in the matrix of pipeline behavior.

The theoretical bid ceiling for any pipeline is established by the ability of it and its distribution company customers to market natural gas to buyers of significant

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27/ This competition is seen in the fact that although the maximum lawful prices under the NGPA are maximum prices only, the actual prices paid for gas in each category are very close to the maximum. See EIA Analysis, supra, at 42.

volumes at the margin. By and large, it is assumed that the marginal customers are large industrial concerns who use gas as boiler fuel. That marginal use has been estimated as one-third of the aggregate natural gas market. 28/ It is also believed that a large percentage of such customers have fuel-switching capability and that the alternative fuel is low sulfur No. 6 fuel oil. 29/ Of course, the marginal users on any particular pipeline may vary, but there is strong evidence that marginal customers are boiler fuel users on average. 30/ This suggests that the limit to which pipelines can bid their average, or rolled-in, gas cost is on average somewhat below the Btu-equivalent price of low sulfur No. 6 fuel oil, less transportation costs. 31/ This implies that pipelines will continue to pay prices higher than commodity-value until their weighted average gas costs approach market-clearing levels.

The consequence is that, even if world oil prices are as low as $25 per barrel, the increase in the average price of natural gas in 1985 is likely to be both large and sudden. 32/

28/ EIA Analysis, supra, at 85-89.

29/ Id. at 95 (Table 31).

30/ Id.

31/ With crude oil prices of around $34 per barrel, this is roughly 70 percent of refiner acquisition cost of such crude. DOE Study, supra.

32/ See C. Abbott, "Pitfalls on the Road to Decontrol: Lessons from the Natural Gas Policy Act of 1978," (March 11, 1982) (paper presented to American Enterprise Institute for Public Policy Research) at 5.

The NGPA was intended to achieve a smooth transition to decontrol by retaining controls on some gas after 1985 and by applying an annual escalator to the statutory price ceilings before that date. However, given market events since passage of the NGPA, continued price controls on some categories of natural gas will do little if anything to smooth the transition. The price escalator provisions applicable to those categories will be largely ineffective to raise prices to oil-equivalent levels because the rates of escalation were based on the world oil market in 1977 and 1978. Within months after enactment of the NGPA, however, world oil prices more than doubled. Since 1979, oil prices have remained generally stable or even declined somewhat. However, even without further increases, existing oil prices imply a price for either completely or partially deregulated natural gas that is far above the NGPA's statutory price ceilings. Because the NGPA will cause this price fly-up, the transition to decontrol scheduled for 1985 is likely to be far from smooth.

Our analysis also tends to show that partial deregulation in 1985 may have severe regional impacts. Each pipeline in 1985 will buy part of its gas at a price determined by the NGPA and part at a much higher deregulated price determined by the competitive bidding process. Because the price of deregulated gas is determined by a competitive bidding process, in theory it should be generally about the same for all pipelines. However, pipelines differ greatly with respect to the amount of regulated gas that they control and also differ significantly with respect to the price of that regulated gas. 33/ The national average burner-tip price of natural gas in 1985, therefore, is only part of the story of partial deregulation. As noted above, that national average probably will be somewhere in the range of the price that would prevail under complete deregulation. The average cost of natural gas to individual pipelines under partial deregulation, however, will range from substantially below the deregulated price to substantially above that price depending fortuitously on each pipeline's endowment of the regulated gas cushion. As a result, a bidding disparity may be created artificially favoring some pipelines in the quest for new supplies and disfavoring others.

Shifts of supply could result, as pipelines with large supplies of inexpensive regulated gas are able to bid supplies away from less fortunate pipelines. The latter pipelines may include most intrastate pipelines and some interstate pipelines as well. In general terms, interstate pipelines that were in deep curtailment in the 1970's or are now

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33/ Studies have not yet been completed that allow us to project the consequences of partial decontrol for individual interstate and intrastate pipelines. However, interstate pipelines vary widely in the relative amount of old gas that they control and in their current weighted average cost of gas. EIA Analysis, supra, at 66. The range of differences in endowments of old gas and current average prices is so large as to suggest strongly that the position of some interstate pipelines under partial decontrol would be similar to that of the intrastate pipelines.

facing average natural gas costs approaching parity with residual fuel oil are, at the least, candidates for being carried above the price that they would have to pay under complete deregulation.

I do not mean to say that supply shifts resulting from deregulation are in all cases undesirable. The DOE Study projects that even under complete deregulation the intrastate market would lose several hundred Bcf of natural gas. 34/ This gas would presumably move to industrial or other uses in interstate markets willing to bid more for these supplies. This loss would result simply from the creation of a rational and nationwide market for natural gas. In such a market, it is the willingness of a pipeline's burner-tip customer to pay for natural gas that determines the pipeline's ability to bid for natural gas in the field market. In a real sense, the competition for natural gas in the field market is not between pipelines but between the natural gas users served by the pipelines. The DOE Study suggests that this competition, even without the distortions of partial deregulation, would result in significant shifts of supply. If so, the resulting dislocations would be painful, but probably are beyond the power of the FERC to prevent. Nor, in my view, should we prevent them even if we could. Surely one of the principal lessons of our experience with natural gas price regulation

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34/ DOE Study, *supra*, Appendix A. Compare 1981 and 1982 in 1982 complete decontrol case.

is that natural gas markets are too complex and too fast-changing to be rationally ordered by administrative or legislative fiat. Attempts to do so result not merely in inefficiency; in the end they fail to serve the interests of fairness as well.

The supply shift that may result from partial decontrol are of a different kind, however. Some areas may lose supply not because natural gas is less valuable to the users there, but because they are served by pipelines with little price-controlled gas. As a result, relatively high-valued users in those areas may go unserved while lower-valued users in areas served by better-endowed pipelines receive gas. Such distortions did not serve the national interest when they resulted from the dual market created by the Natural Gas Act. I do not believe that they will serve the national interest if they result from a different kind of dual market created by the NGPA.

We, of course, cannot be certain of the precise consequences of partial deregulation under the NGPA. But the market-ordering problem is not simply a matter of abstract theory. Indeed, in microcosm it exists now, and there is every reason to believe that, as partial decontrol continues, market disordering will increase. The most concrete evidence supporting this expectation can be found by looking at what is currently happening to prices for the unregulated gas produced from below 15,000 feet. Based upon PGA filings with the Commission, it appears that about 450 Bcf of this gas is being delivered annually to the interstate natural gas pipeline system. This comprises around 3-4 percent of annual consumption.

Prices for this deep gas range from less than $2.00 to $9.7705 per Mcf. 35/ The average price is estimated to be about $7.00 per Mcf with a distinct upward trend in the prices -- as much as $3.00 per year in Louisiana and Mississippi and somewhat less in Texas and the Rocky Mountains. Generally, each successive PGA filing shows more deep gas as well as higher prices. These volumes and prices may very well be the "tip of the iceberg," as intervenors in subject proceedings claim in their pleadings.

Even the average price for deregulated gas is far in excess of the long-term market-clearing price. Certain interstate pipelines are able to bid these prices apparently either because of their large cushion of low-cost, regulated gas or their urgent need to acquire new gas supplies. While the existence of a deep cushion may permit a pipeline to pay higher prices, it does not guarantee such action. 36/ Other

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35/ See, e.g., Transcontinental Gas Pipe Line Corp., Docket No. TA81-2-29-001 (PGA81-2) filed July 31, 1981 ($9.7705/Mcf); Southern Natural Gas Co., (Docket No. TA81-2-7000 (PGA81-2) filed June 1,1981 ($9.2620/Mcf); Panhandle Eastern Pipe Line Co., Docket No. TA81-2-28-001 (PGA81-2) filed July 17, 1981 ($1.911010/Mcf settlement); Michigan Wisconsin Pipe Line Co., Docket No. TA81-2-48-000 (PGA81-2 filed March 31,1981 ($1.915320/Mcf).

36/ See e.g., EIA Analysis, supra, at 66 (Table 19) (showing little correlation between average acquisition cost and the price paid for section 107 gas).

factors, such as the pipeline's reserves-to-production ratio, may also guide their bidding behavior. A few intrastate pipelines have so far been able to match these bids; most, it appears, cannot. Yet this deep gas may be the only significant new source of supply in some parts of the country. 37/ As a result, the reserves-to-production ratio of intrastate pipelines appears to be declining. 38/

Although the exact causes of the recent natural gas shortages in Texas are not yet clear, it appears that they may have been due in part to the bidding disadvantage that the NGPA creates for intrastate pipelines. Preliminary evidence raises the possibility of additional and more severe shortages next winter in both Louisiana and Texas. 39/ Shortages of this kind may confront other markets before 1985 as supplies of other high cost gas (from, for example, tight sands) come to constitute a larger share of the market supply. Deregulation of more than half of the natural gas supply in 1985 will not change the nature of the problem, but is likely to increase its seriousness dramatically. The Commission must be concerned with pressures that could develop for producing states to capture and preserve gas supplies within their

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37/ The major areas supplying this deregulated gas are South Louisiana, Mississippi, Texas and Wyoming, and the Anadarko areas of Oklahoma. EIA Analysis, supra, at 31.

38/ EIA Analysis, supra, at 37-41 (see especially Table 8).

39/ See n. 2, supra.

borders for the benefit of their citizens, obviously to the detriment of the interstate gas market. 40/

Few serious analysts disagree that serious market disorder could occur in 1985 if the NGPA is not amended. Some, however, appear to believe that other factors will moderate the problem. It is argued that average costs under the NGPA's partial decontrol could be less than under total decontrol. It is also argued, and a DOE study confirms, that partial decontrol could yield somewhat higher supplies, tending to depress average wellhead gas prices. It has also been argued that pipelines will exercise self-restraint. More recently, the decline in oil prices has raised hopes that a continued decline over the coming years could augur for a smoother than expected transition. Finally, it has been argued that "market out" provisions in contracts militate at least against the prospect of higher-than-market average gas prices under the NGPA. As the market disorder question comes before the Commission, we will be examining these and other perspectives on the likely scope of the problem and the possibilities for administrative remedy.

40/ See Tenneco, Inc. v. Sutton, Nos. 80-17-B & 80-29-B (M.D. La. 1981) (holding unconstitutional a Louisiana statute that required natural gas to be offered for sale to intrastate users before sale in interstate commerce); cf. Hughes v. Alexandria Scrap Corp., 426 U.S. 794 (1976) (upholding comstitutionality of Maryland statute offering bounty for processing wrecked cars, but with more stringent requirements for processors outside the state than within); Reeves, Inc. v. Stake, 447 U.S. 429 (1980) (upholding constitutionality of North Dakota statute that confined sales from a state-owned cement plant to state residents).

The basic flaws of the NGPA thus appear to be three:

- It will fail to "capture" for consumers the benefits of continued controls on some gas beyond 1984. Instead the NGPA will in effect tend to transfer the economic benefit of partial controls to sellers of decontrolled gas.
- It has not eliminated the dual market distinction between interstate and intrastate purchasers nor provided for parity between the two markets in terms of access to additional gas supplies. Instead it has reversed the advantage.
- Absent an unforeseeable collapse in world oil prices, it will not provide for a smooth transition to partial decontrol.

The solution that directly addresses the imbalance of price-controlled gas is the phased, total deregulation of all natural gas. In this connection, the debate is not over whether there will be deregulation because the NGPA prescribes deregulation for 1985. However, the kind of deregulation -- partial -- has perverse consequences that total deregulation appears to avoid. In that sense, the change is for the most part a qualitative one. How total decontrol should be accomplished is, of course, very important. I do not believe that immediate, total decontrol of gas prices at the wellhead is the answer. The result, as the DOE Study indicates, would simply be to speed up the timetable for the price spike expected in 1985 under the NGPA. There is a prospect for severe disruption of the market in the short run if this option is selected.

I believe that the NGPA schedule should be adhered to for the deregulation of those categories of gas scheduled for deregulation in 1985. The deregulation of gas supplies scheduled for 1987 should be moved up to 1985, and gas that would remain indefinitely subject to NGPA price controls should also be deregulated on that date. All gas categories should be phased up to a target market-clearing level by January 1, 1985. And, on that date, all regulation of natural gas prices at the wellhead should be terminated. Statutory provisions would deal with the contract problems for gas prices that would remain either above or below market levels through a requirement of renegotiation or otherwise. These problems could be dealt with in the period from the date of passage until January 1, 1985. Time extensions could be available under prescribed circumstances.

Under the kind of legislation I have just described, consumers would confront a gradual escalation in their residential heating bills, rather than an abrupt one. Moreover, natural gas pricing policy would not continue to encourage homeowners to convert from fuel oil to natural gas in the mistaken belief that natural gas will continue to have a large price advantage.

There is and will continue to be a healthy debate over the precise magnitude of various aspects of the market-ordering problem. The problem is complex and subtle in its origins but risks being painfully stark in its manifestations. There is good reason to believe that the bidding disparity among pipelines will produce serious disruption between the interstate and intrastate markets and within those markets. A sharp increase in average gas prices in 1985 could painfully affect many gas consumers, homeowners and businesses alike. And many gas consumers may be surprised to learn that, despite these distortions and disruptions, the price they are paying for gas is largely the same as they would pay under total deregulation without the disruptions.

The Commission does have some limited authority to address certain aspects of the market-ordering problem discussed above. For example, the emerging bidding disparity between interstate and intrastate pipelines might be mitigated if the price of some controlled interstate gas were raised. The fly-up in prices to oil-equivalent levels in 1985 might similarly be dampened. The amount by which prices would need to be raised to achieve the first goal would probably be relatively small during the pre-1985 period. During the period following partial decontrol, prices for controlled gas would have to rise considerably more. However, as we have seen from the chart, those price increases may likely be largely or entirely offset by reductions in the price of decontrolled supplies.

The ability of the Commission to address the contract problem, however, is, as I have stated, problematic.

No combination of administrative actions can promise to fully resolve these problems. At most, the Commission may be able to render the problem less severe, especially if we are aided by good luck in warm winters and falling oil prices. I do not believe that the Nation should have to depend upon good luck as a substitute for good public policy. Accordingly, I strongly suggest that the Committee take up these matters at the earliest possible time, hopefully in the form of a review of Senator Johnston's proposed total deregulation bill.

Senator NICKLES. I thank you, Mr. Butler. I might ask one question to begin, and then I know Senator Metzenbaum and Senator Bumpers have some additional questions.

Statements have been made that it was anticipated that FERC, through administrative action, would take some steps to alleviate some of the problems which I think you very well outlined. I hadn't seen your statement before today so I was trying to read what you were saying and to skip ahead to your final summation, but could you briefly, for this committee, give your plans on anticipated regulatory changes?

Mr. BUTLER. I can do that. Let me do it by suggesting this. If we are correct in our view, which is, I must say, supported, preliminarily at least, by the analysis that DOE described to you a little bit earlier, if we are correct in our view that the Natural Gas Policy Act is causing severe market disorder, it leads to one significant conclusion: The distinction between the interstate and intrastate markets has not been eliminated.

As a matter of fact, the only thing that may very well have happened is that the bidding advantage has simply been reversed from one market to the other.

It was the intention of Congress, as I read the statute, to eliminate the dual market under the Natural Gas Act, by passing the Natural Gas Policy Act, and it may be that the Commission has the authority to assure achievement of Congress intention administratively under the Natural Gas Policy Act.

I do not recall that I have ever made any statements to the effect that I advocate administrative decontrol. The reason for that is fairly simple. The FERC does not have the authority to decontrol anything. The authority of the Commission is very strictly prescribed by the Natural Gas Policy Act, and the Commission does have the authority to raise some prices, but not deregulate them.

Now going back to the problem, you have three sets of proposals that are worth talking about at this point. First, we have the deep-water-gas rulemaking. As I mentioned earlier, there are some due-process problems with my discussing the merits of that. I will simply say that the order I think will reflect the Commission's finding that very little drilling has been done in water depths beyond 300 feet. The consequence was that an order was voted upon to provide an incentive price for gas in that category, and the incentive price was capped at where the Commission judged the upper end of the range of probable commodity values of gas would be found in order to avoid aggravating the problems of disorder.

Senator NICKLES. Is that pending before the Commission?

Mr. BUTLER. That is pending now before the Commission. The consequence is that it is difficult for me to say much more about it than simply describe what it is.

As to the second item——

Senator NICKLES. Will you be coming up with a statement or an order in the ruling?

Mr. BUTLER. There will be an order issued probably some time in the near future. I would guess in the next couple of weeks. The order was voted out back in December, and apparently there have been some staff problems in the completion of the drafting.

The second item, Senator, is the so-called near-deep-gas rulemaking. That rulemaking was noticed, I believe, on December 22, 1981. What it reflected was a Commission recognition that there appears to be a substantial falling off in drilling in depths between roughly 10,000 and 15,000 feet. The basis of the information or the basis of that conclusion was data published by the American Petroleum Institute in which they indicated that drilling footages between 10,000 and 15,000 feet had declined by 8 percent at the same time that drilling footages below 15,000 feet had increased by about 23 percent, so you are looking at, and this probably oversimplifies to a certain extent, a net loss of something like 31 percent in the opposite direction.

Now you have got to ask yourself why this has occurred because we believe that there probably are substantial gas prospects between 10,000 and 15,000 feet, and trying to get to the answer "why" is the reason that we issued that notice of proposed rulemaking. It is in that notice of proposed rulemaking that we hope to be supplied with enough information to make a rational decision whether an incentive price is called for.

Senator NICKLES. That decision——

Mr. BUTLER. That decision has not been made. Hearings have been scheduled here in Washington on that matter for April 6 of this year.

Senator NICKLES. OK. Hearings are scheduled in April.

Mr. BUTLER. It will take some period of time after that to analyze the oral presentations along with the written presentations or written comments that have been provided in that rulemaking. It is very difficult for me to estimate how long it will take for us to complete the proceeding. One thing that is worth noting——

Senator NICKLES. We are operating under the 5-minute rule, and so if you could just give us the final one and I will ask the other Senators to comment.

Mr. BUTLER. The last item is what we have considered in the form of a notice of proposed rulemaking, but are now looking at prospectively in the form of a notice of inquiry, is a determination whether the problems of market disorder are as likely as the DOE study seems to indicate, and in that event, what the Commission's authority might be to remedy or mitigate the disorder.

Senator NICKLES. Senator Metzenbaum?

Senator METZENBAUM. Mr. Butler, when you appeared before this committee you testified under oath, and I asked you at that time if you were aware that there had been a lot of talk about the administration in the press about administrative decontrol of natural gas.

You said "Yes." I then went on to ask you, as a matter of policy, do you perceive FERC's role as implementing the act as passed, or do you think FERC should use the act to carry out decontrol administratively even though that was not Congress intent?

You answered me and said as far as administrative decontrol is concerned, the statute does provide for something that can be characterized by that. You then said, "I will not go to that Commission and try to deregulate natural gas prices across the board or anything else" or anything else, "* * * because I think that is the prerogative of Congress."

Now if you come up with a deep water gas ruling which provides for 200 percent of the section 103 price, and if you provide for near-deep gas deregulation in a rulemaking which would cost about $3.3 billion in higher gas bills by giving 150 percent of the section 103 price, and if you move into the area of decontrolling old gas, have you not in effect actually achieved at least very substantially the same thing as decontrol, and haven't you done exactly what you promised this committee you wouldn't do at the time of your confirmation hearings?

Mr. BUTLER. No.

Senator METZENBAUM. Tell me how you say that.

Mr. BUTLER. It is very easy, Senator. The fact remains that gas prices remain under price controls. It is just that simple.

Senator METZENBAUM. If you decontrol——

Mr. BUTLER. The Commission does not have the authority to decontrol anything.

Senator METZENBAUM. I understand, but if you reprice old gas in a rulemaking, and if you take near-deep gas and reprice it, at $5.40 per thousand cubic feet, isn't that tantamount to achieving decontrol through the rulemaking process?

Mr. BUTLER. No, it is not.

Senator METZENBAUM. The gas will be effectively decontrolled, wouldn't it?

Mr. BUTLER. No, it will not.

Senator METZENBAUM. If it is considered new gas, wouldn't it be decontrolled?

Mr. BUTLER. Only if the statute provides for it.

Senator METZENBAUM. If it is repriced at 200 percent of the section 103 price, for example, with respect to the deep water gas, which is almost final at this moment, what will be the ceiling price on that gas?

Mr. BUTLER. What will be the ceiling price on deep water gas? Under the rule that we passed, it should be, if my recollection is correct, about $5.15 at present, or is that about right? A little higher; that is probably in the area.

Senator METZENBAUM. That is substantially higher than the present price, and it is certainly approaching section 107 price for tight-sands gas, isn't it?

Mr. BUTLER. What we found is that there is not much gas procuced in deep water.

Senator METZENBAUM. That doesn't matter, but the fact is you are taking a segment of the gas available now and recategorizing it, redefining it, and it will increase its price substantially, and whether there is a lot or a little, you have achieved that objective, and certainly with respect to near-deep gas there is certainly enough of that. We are talking about $3.3 billion there. We are talking about price increases for old gas of about $48 billion. So, you are certainly achieving the same objective.

We know your own position is for decontrol of the price of gas, and we respect you for that, but you promised this committee—as a matter of fact, it was one of the reasons I voted for your confirmation—that you would not do by regulation or by rulemaking or through the FERC that which Congress has not really indicated its decision to do.

Mr. **Butler**. Senator, I stand by the statement that I made earlier, and the fact is that I have neither proposed nor does the Commission have the authority to deregulate gas prices. The Commission does have authority to increase gas prices in some cases, and with respect to the deep-water gas and with respect to near-deep gas, if the Commission makes appropriate findings, under section 107(c) of the Natural Gas Policy Act, which provides us with the authority to provide an incentive price for production of gas that we find would not otherwise be produced.

With respect to the other category of gas that I mentioned to Senator Nickles in response to his question, that is so-called flowing gas. Under sections 104, 106, and 109 of the Natural Gas Policy Act, this committee and the Congress provided the Commission with the authority to prescribe a price that is higher than otherwise prescribed by those sections if it makes two findings. One of them is that the price is higher, and second, that the price is just and reasonable under the Natural Gas Act. So the consequence is I do not propose to do anything and will not do anything that is outside of the authority of the Commission under the statutes.

Senator **Metzenbaum**. If a rose looks like a rose and smells like a rose and has every other indication of being a rose, or if natural gas prices are decontrolled, whatsoever the reason or how it is done, isn't it in effect achieving the same objective? As far as the American consumer is concerned or the fertilizer industry or the petrochemical industry is concerned, doesn't it wind up with the same impact?

Mr. **Butler**. Let me explain to you why it is not, and let's use flowing gas for the example.

Under the conventional wisdom, the Commission is required to adhere to some kind of a cost-based finding in order to prescribe the price. Now let's see what happens with respect to deregulated gas prices as compared to those the Commission might raise, that is, the flowing gas, otherwise regulated gas.

If the Commission were completely to eliminate the so-called gas cushion as it stands right now by raising the price of flowing gas under those three sections of the act, and if as a result of a conflagragation in the Middle East or some other problem, for example, the blocking of the Straits of Hormuz, all shipments of Middle Eastern oil were cut off to the United States, it is conceivable—we saw it once before in 1979—it is conceivable that the world oil price would again double. In that event a spread between oil and gas prices would recur, and the Commission would probably be without authority to eliminate the reappearing cushion. So the consequence is the Commission is not deregulating anything.

I hope I made this clear in testimony before other committees of Congress, and I wish very much to make it clear to this committee, the Commission is very limited in its authority. It cannot solve these problems, and that is the reason I have repeatedly said that I would far, far prefer to see Congress take this question up because congressional authority is plenary and ours is limited to what you have granted us by statute.

Senator **Metzenbaum**. Mr. Butler, my time has expired, but Mr. Chairman, I know Senator Bumpers has questions. I will be back. I will excuse myself for 5 or 10 minutes, but I will be back. I have additional questions.

Senator NICKLES. I thank the Senator. Senator Bumpers?

Senator BUMPERS. Mr. Chairman, you said that under section 107(c), and I assume you are talking about the Natural Gas Policy Act?

Mr. BUTLER. Yes, sir.

Senator BUMPERS. That you have to make certain findings in order to decontrol the price of near-deep gas. Is that correct?

Mr. BUTLER. No, sir.

Senator BUMPERS. Raise the price?

Mr. BUTLER. We can increase the price.

Senator BUMPERS. What are those findings?

Mr. BUTLER. The findings as I recall them are essentially threefold. We have to find the gas is produced under conditions of extraordinarily high cost or risk, and that an incentive is necessary in order to result in the production of that gas. That roughly is what we have to find.

Senator BUMPERS. How was the price of near-deep gas set in the first instance pursuant to the Natural Gas Policy Act?

Mr. BUTLER. There is not a pricing category for near-deep gas.

Senator BUMPERS. What is the price? What is the price now?

Mr. BUTLER. It depends on which category it falls under, Senator. If it is new offshore gas——

Senator BUMPERS. I am talking about onshore.

Mr. BUTLER. The 103 price right now I would guess is something on the order of about $2.60.

Senator BUMPERS. You state there is a decline of 8 percent?

Mr. BUTLER. That is what API claims. I can't adopt those numbers because they are theirs.

Senator BUMPERS. How do you seek to approve or disapprove their figures?

Mr. BUTLER. What I wanted to do, Senator——

Senator BUMPERS. First, without getting into that, Mr. Chairman, let's accept that figure. Let's just assume there is an 8 percent decline. Now that in itself is not a sufficient justification for either raising the price or attempting to decontrol or anything else, is it?

Mr. BUTLER. If you take that number and compare it with what is happening with respect to drilling footages in other categories, it is enough to raise the question whether there is a high cost, high risk, necessary incentive type of finding that the Commission might make. And all we have done is to issue a notice of proposed rulemaking in which we attempt to elicit information.

I would like to say in that connection that Judge Leventhal made it extremely clear in connection with that, that the Commission, our Commission, in one of his last opinions before he died, that the Commission cannot make a decision on the basis of inadequate information or information that is known only to the agency.

We do not propose to make a decision until we have collected data sufficient to tell us whether the answer should be yes or no. We are agnostic about the question, quite frankly.

Senator BUMPERS. I am pleased to hear that. Let me ask you this. Under the Natural Gas Act, was it 1946, 1947, along in there when the Natural Gas Act was passed?

Mr. BUTLER. It was 1938.

Senator BUMPERS. There is a provision in there that says prices shall be, quote, "just and reasonable."

Mr. BUTLER. Sections 4 and 5 of that act, that is correct.

Senator BUMPERS. Since that time, both the Federal Power Commission and FERC and the courts have always found, and the courts have affirmed, that that means that just and reasonable prices must be cost based.

Do you agree with that?

Mr. BUTLER. There is some dispute over that, quite frankly. I think the lawyers can argue that question one way or the other. Lawyers can argue just about anything one way or the other.

Senator BUMPERS. Are you not a lawyer?

Mr. BUTLER. I am, sir, and so I know from firsthand experience. The conventional wisdom is, that the Commission is limited to a cost-based model. Now there is language in the Supreme Court's Permian Basin decision in which the Court explicitly says that the Commission has the right to take into consideration noncost factors. It did that in a number of subsequent area rate decisions, and in the first and second nationwide area rate cases, and the courts confirmed that that is in fact the case.

The question is how far you can go in looking at noncost factors.

Senator BUMPERS. That is my very point. I am not familiar with the Permian Basin case which you cite and the Supreme Court language, but it has been my understanding since I practiced a little gas law before I got into this business, that no rate had ever been approved by the Federal Power Commission or even by FERC for that matter, or by the courts, that was not cost based. As desirable, for example, as improving and increasing our national reserves might be, and as desirable as it might be to get more wells drilled in the 10,000 to 15,000 feet range, that in itself is not a justification for giving an increased cost in price, increased price.

Mr. BUTLER. Well, I'm sorry. I got sort of——

Senator BUMPERS. I understand that. I have the same problem back here. What I am saying is, I will repeat this. As desirable as the drilling of more wells between 10,000 and 15,000 feet might be, as desirable as the overall national goal ought to be to increase our reserves and find more gas, those two things in themselves are not sufficient justification for increasing the price of that gas, are they?

Mr. BUTLER. Senator, I think that it is necessary to distinguish between the 10,000- and 15,000-foot rulemaking and the flowing gas rulemaking because the rules are different under the statute with respect to the 10,000- to 15,000-foot gas. There is a statutory prescription of the kind of finding that the Commission has to make, and what you wind up with is a formula that is largely judgmental, and it is reflective of the fact I think that Congress departed from cost-based methodologies itself in prescribing the prices under sections 102, 103, 106(b), and 107.

The other question or the real question there is, does the Commission make the three statutory prescribed findings? With respect to flowing gas, Senator, your question I think is precisely accurate.

The question with respect to old gas does base itself on a determination that would have to be made by the Commission as to whether or not the rates were just and reasonable under the Natural Gas Act which is a separate statute, and I think the cases——

Senator **Bumpers**. Are still out there?

Mr. **Butler**. Yes. That is correct. I refer to some statutory history from the conference report on the Natural Gas Policy Act, Senator, in which a statement is made that with respect to 107(c)(5) gas, that Congress expressly stated that incentive pricing is not intended to be cost based. So with respect to that gas, I think there is probably some statutory history to the contrary. I would like to suggest again, Senator, that as I told——

Senator **Bumpers**. Before we go any further on that point, I think even the language in that conference report did not include flowing gas.

Mr. **Butler**. I am only referring to gas under 107(c)(5), not the so-called old gas.

Senator **Bumpers**. Go ahead.

Mr. **Butler**. I just wanted to, I guess, share with you what my concern is about this whole process. That is that I see on the basis of the information that we have before us a very, very serious prospective problem. The Commission's authority and its resources in examining it and dealing with it are limited. I would really very much prefer that the question be addressed by the Congress.

Senator **Bumpers**. I would, too. Unhappily, everybody doesn't agree with my philosophy on this subject, but just going a little bit further, even assuming that Congress in the report, in the conference report—that language, I must confess I was not aware it was there. I promise you having been a conferee I would have tried to make sure it was taken out, but even assuming that, putting the very best face on it, you are right, if you hang your justification on that language, that you have a right to offer incentive prices.

How would you justify that in light of the fact that in 1980 we drilled 60,000 wells, and in 1981, just 1 year later, we drilled 78,000 wells, an increase of 18,000, or that in the beginning of 1981 we had about 3,000 rotary rigs—I forget the exact amount—going. At the end of the year, we had 4,500, and there is still a waiting period, a long waiting period, on drilling rigs? How would you justify an increase in price as an incentive?

Mr. **Butler**. Senator, I regretfully cannot answer that question. The problem that I have got is that it goes to the merits, and there is a substantial due process question raised under the Pillsbury case in the American Public Gas Association case.

Senator **Bumpers**. I raised the question more—I am not asking you to get—I understand all of that.

Mr. **Butler**. What I would like to do is to suggest to you that if you have not done so, we would very much like to have your information and your comments and your data in our rulemaking along with that of the others who provide it.

Senator **Bumpers**. I appreciate that offer. Now if we could just get back to the basic question here, this just continues to plague me in that I have never, I mean I know we all see things through different glasses, but when it comes to the whole idea of decontrol which you personally favor, and I am sure you are going to do the right thing over there, and in an administrative way, but just what do the American people get out of this that we are not already getting? We are getting all the wells drilled. I participated in the filibuster against natural gas pricing, but finally voted for the conference report which I consider the single biggest mistake I have made since I have been in the Congress. It was designed to get all five parts of the President's energy policy in place. I wish I could recall that vote, but we are there.

What do we get? What can I tell the people of Arkansas who are absolutely ravaged right now trying to heat their homes? What do I tell them they are going to get out of decontrol if and when it comes?

Mr. **Butler**. Senator, the answer comes in two parts. First of all, the Natural Gas Policy Act has I think done some good things, and frankly, I admire those who voted in favor of it because one of the things that it showed us is that there is a relatively substantial price elasticity of supply. We have seen production come from some places we did not expect to see it, and I think the two areas that come to mind would be Tuscaloosa which has provided substantial new supplies of gas, and the Overthrust Belt, deep gas from the Anadarko Basin. Also there has been some encouragement of the production of gas from so-called tight sands which probably would not otherwise have been produced, so I think that we have benefited as a Nation from some increase in supply, and I would hope that that trend would continue.

We have also learned that there is a fairly substantial elasticity of demand for gas that we didn't expect to see back in the 1970's, 1972, 1973, 1974, this is before it began. We have seen particularly in the industrial sector a substantial cutback in the use of gas and the employment of a number of conservation devices. There are others who are much better equipped to speak to the effects than I. So the Natural Gas Policy Act has done some good things, but it has also we think, maybe created some problems, and those problems are essentially these.

We think that gas from deep horizons, deregulated gas, is being priced at an unreasonably high price, quite frankly. I think that one of the interesting things that you see in this debate is a lot of producers on the other side of total decontrol, which is completely anomalous until you find that those people are collecting about twice the amount for their gas as they should be collecting. That is one of the problems that I think we would like to see remedied.

The second thing is what I mentioned during the course of my prepared testimony that there are disparities among pipelines with respect to their ability to acquire supplies, and I would like to focus on that for just a second because I think it is extremely important. For the most part, those disparities are occurring in the producing States. I see two very, very serious problems as a result of that. In Texas, Louisiana, and Oklahoma specifically, if the pipelines in those States are unable to acquire gas supplies for the use of their citizens and their industries, terrible political pressures I fear are going to be created that are going to impel the State governments in those States to attempt to acquire gas supplies for the use of their own citizens, and there are constitutional ways in which that can be done.

That reflects I think adversely on the interstate gas market, but it suggests to me that there is going to be less gas available because of more artificial layers of artificial restriction than otherwise exist.

The second problem is the problem of rippling disruptions throughout the economy. There are crucial points. Over 50 percent of this country's anhydrous amonia production is located in the Mississippi River mouth in the Texas Gulf, and that is what you use to make fertilizers for farmers. Senator Exon expressed his concern over rising prices of fertilizer for farmers. Farmers are going to be faced conceivably with drastic shortages of gas after 1985 when those plants cannot function because gas is either unavailable or their product has become uneconomic. That suggests shortages of something other than just gas. The same thing happens with respect to butane. Butane is a petrochemical intermediate that is used to make rubber, synthetic rubber. Over 60 percent of that capacity is located in the same area. That suggests shortages of the basic ingredient for Senator Metzenbaum's constituency, the tire industry. Other petrochemicals, over 70 percent of this country's petrochemical capacity in aggregate is located in that area, and the industries that are dependent on it include, for example, the textile industry, over $26 billion of product, gross national product in 1980. They are heavily dependent on it for synthetic fibers; the automobile industry, $51 billion in primary markets, $57 billion in aftermarkets. These are the kinds of facts that seem to be coming to light, and if that is the case, the rippling disruptions throughout the entire economy could be extremely severe.

I don't know the answers to these questions. All I am trying to do is to frame the questions, and hopefully Congress will address them and we won't be put in that position.

Senator BUMPERS. The reason I was going on is because I thought you had finished the questions, and Senator Metzenbaum wasn't back.

Senator NICKLES. I have a couple of quick questions.

Senator BUMPERS. I am going to have to leave. If I may, I have got a couple of questions I would like to submit to Mr. Butler for the record.

Mr. BUTLER. I would be pleased to answer those, Senator.

Senator NICKLES. Just a couple of quick questions, and then Senator Metzenbaum, and we will be finished. I have a copy of a list of all the different NGPA price ceilings, and I see ranges, I guess current ranges range from 26 cents all the way up to the highest category, I guess gas produced from tight sands, will be $5.18, and below that, the next highest I see would be $3.03 for 102.

How many different classifications of gas do we have today?

Mr. BUTLER. There are in total about 28.

Senator NICKLES. 28?

Mr. BUTLER. But the number of categories under the statute, those are subcategories of the categories, and in the statute you have 102 through 109. You have got a lot of subcategories under that, and the prices for a lot of that gas is essentially identical.

Senator NICKLES. Then we have the deregulated deep which you testified earlier had an average range of what, $6.56, and ranged all the way up to $10?

Mr. **Butler**. That is correct. One thing that I would like to point out about that $6.56 price is that included in it is the average of all the prices that are so-called incentive gas under section 107. The three major categories are tight sands, Devonian shale, and the deep gas. The only problem is including the tight sands. There is a price ceiling for it, so to a certain extent, it tends to degrade the estimates of where the range of deregulated gas prices are. It tends to pull it down. I can't tell you what that range is for below 15,000-foot gas.

As a matter of fact, I think I can. It would be something like—let's see. Well, the highest price, the price range appears to be running for deep gas about $2.31 all the way up to $9.85. What the average is out of those numbers I don't have.

Senator **Nickles**. I was interested in your comments, and also the testimony that we received earlier that showed that deregulated gas presently is what, 4 percent of the total market?

Mr. **Butler**. That is correct.

Senator **Nickles**. Estimated after 1985 to be 50, 60 percent; presently then you are looking at these gas prices. I guess that some of the old 104 gas, that is 26 cents, that ranges all the way up to $1 and whatever, which is actually subsidized.

Would it have gas that was going for $9.85, say is that was only going up to $7, you still think primarily the cost to the consumer is going to be the same? We could raise that 102 up, and that would probably bring the deep gas prices down to some extent?

Mr. **Butler**. I think that is correct, but you have got a line out there some place, and you know that pipelines run into serious risks of losing customers if they go above it. Now there are two ways that you can affect that line. One of them is to raise prices above the line, but those have to then be offset by prices below the line in order to keep the average from going above it, and losing those customers. I might say that would also be a disaster, an absolute disaster for residential consumers. The reason for that is that a price lower than the alternative price of fuel to them, that is, No. 2 home heating oil, is driven by those customers that we call the customers at the margin, and with the departure of the marginal customer, you lose about a third of the people in the market. The consequence is that a third of the fixed costs of the pipelines gets shifted to those remaining customers so they wind up with an explosion in gas prices, but that swerves off the point.

The other way you can get at this problem is to attack it from the downside and if you take those prices below the line and you pull them up, what that means is that in order to keep the average price from going above that line, prices on this side have got to come down.

Senator **Nickles**. In other words, you are looking at the total deregulation and now we have 4 or 5 percent of it in basically a commodity that had been controlled I guess going back to Phillips?

Mr. **Butler**. That is correct.

Senator **Nickles**. And so it has been suppressed and actually held below its true market value?

Mr. **Butler**. That may or may not have been the case. I think it clearly began to become the case after about, probably some time in the midsixties, but arguably up to that time the demand for gas probably set a price that was not too much different than the regulated price. After that point in time, however, you did begin to see disparity, and guess what happened? The price was too low, you got shortages, wound up with curtailments like the ones we had in 1976, 1977, actually beginning in 1970.

Senator **NICKLES**. OK. I appreciate your comments. Senator Metzenbaum?

Senator **METZENBAUM**. Mr. Butler, when you appeared before our committee in your confirmation hearing I talked with you about the question of the passthrough of decontrolled or high-cost gas prices and asked you, quote, "whether or not it constitutes waste, fraud, and abuse under the Natural Gas Act for pipelines via NGPA filing to pass any gas that would not be passed in a decontrolled market since it is above the market clearing price." You took the position at that time since it was a matter that would come before the Commission, that, "I again would find myself in a position of offering a prejudgment on the issue were I to speak on either side," and yet the facts are that the issue is before the Commission.

Mr. **BUTLER**. That is correct.

Senator **METZENBAUM**. You know that I as well as a number of States and other groups have filed an action before the Commission, and I would like to ask you how do you reconcile the statement you gave to the committee with the statement that you made in docket No. RN 81-27 in which you address yourself and prejudge the issue. I quote:

> Secondly, it illustrates why the Commission is seeing requests by pipeline companies to include in their PGA account contract prices that clearly exceed market clearing levels. Incidentally, this phenomenon also relates to the Commission's apparent witch hunt under the rubric of Section 601(c)(2) in which pipelines have been sought to be penalized on fraud, abuse, or similar grounds for doing exactly what the NGPA impels them to do and that which anyone with an iota of economic education could predict they in their economic best interests would do.

Now, if that isn't indicating a prejudging, going so far as actually to use some rather strong language in indicating that those of us who disagree with you are engaged in a witch hunt, then I don't know what is. I would like to ask you how do you reconcile the statement you made at the confirmation hearing and the statement that you made in that case which is certainly a prejudgment on your part?

Mr. **BUTLER**. Senator, there are two sets of questions that arise in connection with section 601(c) cases. You have first of all questions of legislative interpretation which is essentially a legal question.

Second, you have questions of fact. At the time that I was here before you, I had not had an opportunity to review extensively the legislative history of section 601(c) of the act. I just simply, I would have prejudged both legal and the facts——

Senator **METZENBAUM**. I want you to answer the question. I am not asking you about the legislative history. I am not asking you about the merits of the issue. I am not questioning your right to disagree with any position I might have.

What I am questioning is the propriety and the contradiction that is self-evident in your stating, prejudging an issue now when you said, you promised under oath that you wouldn't.

Mr. **Butler.** I do not consider myself to have prejudged the question.

Senator **Metzenbaum.** If you say that somebody is involved in a witch hunt, don't you think, Mr. Butler, that any reasonable person would conclude that by mere designation in that manner, and then going on to say that anybody who had any economic sense at all would understand, don't you think that is prejudging the issue?

Mr. **Butler.** No, I don't, and I think——

Senator **Metzenbaum.** What did you mean?

Mr. **Butler.** That is what I am trying to tell you if I might.

Senator **Metzenbaum.** I will let you go ahead.

Mr. **Butler.** What I would like to do again is to distinguish between judgments of law and judgments of fact. What happened between the period of time in which I appeared before this committee and the time that I wrote that comment in my concurrence in the Commission's incremental pricing rule was that I did have an opportunity personally to spend considerable time looking at the legal question of what fraud, abuse, or similar grounds meant.

By the time I got to that concurrence, it had become apparent to me that the fraud, abuse, or similar grounds language was not intended by the Congress to be a market-ordering device. That was the sense in which it had been employed by a number of the people who had filed in those cases. And I think that what that language was that you read was an "apparent" witch hunt.

The thing that I was focusing on there was the law, the standard of law that was being applied, not the application of the facts to that standard.

Senator **Metzenbaum.** You said that what I read was an apparent witch hunt?

Mr. **Butler.** Is that what I said?

Senator **Metzenbaum** [reading]: "* * * also relates to the Commission's apparent witch hunt."

Mr. **Butler.** That term——

Senator **Metzenbaum.** Is that different than a witch hunt?

Mr. **Butler.** Yes, I think it is. What I was saying, what I was trying to say is that the standard of law that was applied or that was attempted, that the filing people, the applicants in those cases, protestants, were attempting to employ, appeared to me to be completely off the mark, and if it was completely off the mark, there is not a basis——

Senator **Metzenbaum.** Let me ask you a question. If a judge did exactly what you did, what would the parties say about the judge? They would ask him to excuse himself, to step off, and maybe they would ask him to step out as a judge.

You were taking a position publicly on an issue pending before the Commission, which is a five-member Commission. You were indicating how one of those Members felt about it, and you are the Chairman of that Commission. Now, you start to make a distinction between what is the law and what is the evidence.

What would you think when you were practicing law with Baker & Botts if somebody had done that? What would you have thought of that? Would you have thought it was all right then?

Mr. **Butler**. Senator, the ruling standard is in the 1948 U.S. Supreme Court decision FTC against the Cement Institute in which the U.S. Supreme Court made the statement that the standard for refusal is whether or not an administrator has an unalterably closed mind about a material issue of fact in an adjudication pending before it.

Senator **Metzenbaum**. What is waste, fraud, and abuse? Is it a question of fact?

Mr. **Butler**. It is a question of law and a question of fact. I have reached my conclusions about the questions of law and they are reflected in the general policy statement the Commission issued.

Senator **Metzenbaum**. Again in another case, in another matter before you, you did the same thing. You have the CWIP issue before you, construction works in progress. I asked you in a written question about your views on that, and you responded on page 9 indicating again that—

> I neither agree nor disagree with the Advisory Group's recommendations concerning CWIP. In fact, I do not know what the Advisory Group's position is concerning CWIP. I have some passing familiarity with the question, but consider it improper to take a position on the issue either generally or in a particular case without the benefit of a complete record.

The facts are the case is pending before you.

Mr. **Butler**. That is correct.

Senator **Metzenbaum**. What did you do about it? Have you stated your views publicly?

Mr. **Butler**. I have not.

Senator **Metzenbaum**. When you gave a speech before the Edison Electric Institute on October 27, 1981, certainly this matter was pending at that time, and in that speech what did you say? You said in that connection: "I disagree with the staff position contained in our notice of proposed rulemaking that there should be a presumption against the inclusion of CWIP in the rate base."

Now do you still say you have not?

Mr. **Butler**. I certainly do. A presumption against CWIP amounts to a prejudgment itself. I expressed——

Senator **Metzenbaum**. I want to tell you something. I thought I was a pretty good law student, and I was. I was a pretty good lawyer, and I was, but I tell you that you have some hijinks about how you arrive at conclusions about prejudging cases that I have never heard any judge, any judge, use before. Most judges feel it obligatory on them to lean over backwards not to give any indication of prejudgment.

Mr. **Butler**. I would recommend to you that you read the case involving Assistant Secretary Bingham in connection with her comments about lead standards. If you want to see inflammatory language that the court used, take a look at that one.

Senator **Metzenbaum**. That doesn't make it more right in your case.

Mr. **Butler**. It is what the law is, and the thing is, think about it this way——

Senator **Metzenbaum**. What the law is is a question for you to be determining as you sit in judgment, not to be making a speech about it in October of 1981 before the Edison Institute. Your responsibility as a judge is to hold your judgments until the case has been heard and submitted and argued with respect to all of the legalities and not to be going out and making speeches as to what your opinion is.

Mr. **Butler**. That is true with respect to judgments about questions of fact. It is not the case with respect to judgments about issues of law, and I can give you a very simple example. It was used by the U.S. Supreme Court in the *Cement Institute* case. They pointed to a very I guess obvious example of a U.S. District judge, for example, who sees on his docket the same kind of case, case after case. Obviously during the course of his experience he develops ideas about what the law is and ideas about what policy is.

What would happen is if he were expected to recuse himself for a prejudgment of law or policy question, you would never get——

Senator **Metzenbaum**. You insult my intelligence to tell me there is something comparable between a judge's previous decision in a case, and therefore expecting him to recuse himself in a subsequent case, and you are making statements before the case has ever been decided. That is a totally different kind of matter.

Did you ever hear of a Supreme Court judge going out and making a speech to any kind of a group and indicating his opinion with respect to a pending matter? Never—but you do.

Mr. **Butler**. I would refer you to Mr. Justice Rehnquist's opinion in *Laird* v. *Titon*.

Senator **Metzenbaum**. I am interested in your conduct supposedly as an impartial person hearing these matters coming before you. That is what I am interested in, not in the opinion of Judge Rehnquist. Supreme Court judges, Federal District Court judges, do not go out and make speeches about pending matters, but you somehow feel that you have the right to do that you try to make some distinction between the law and the facts, and I say to you that maybe you ought to go back and read the ethics of the legal profession because that never happens to my knowledge.

Mr. **Butler**. There is a relatively extensive article in the 1980 Columbia Law Review by Professor Peter Straus from Columbia University in which he extensively and exhaustively looks at the question of what the rules are for the recusal of decisionmakers in administrative proceedings. I would commend that to you, Senator, because he finds a great deal to argue in favor of doing exactly that.

What it amounts to is that you tell people what you are thinking. You tell people what is going on so they have got an opportunity to respond to you in the proceedings, and to take a position to the contrary. All that does otherwise is to make your administrative people clam up, and the American public and the people who practice before those Commissions have no opportunity to know what you are thinking. Is that the kind of thing that we want?

Senator **Metzenbaum**. I want judges to withhold their judgments until they have heard all the evidence and all the legal arguments before indicating their position, and particularly when they sit as either the presiding judge, the Chief Justice, or the head of the Federal Energy Regulatory Commission. I think you owe nothing less than that to the American people.

Mr. **Butler**. I don't think I have violated those standards, Senator.

Senator **Metzenbaum**. Senator, I have further questions, but I yield back to you. My 5 minutes is up.

Senator **Nickles**. I appreciate the Senator from Ohio's comments. I have a couple of quick questions.

Mr. Butler, I think you mentioned the fact that the energy information was possibly the same that a number of contracts that are now existing let's say have escalator clauses?

Mr. **Butler**. That is correct.

Senator **Nickles**. Do you happen to know the percentage that possibly have the most favored nation clauses?

Mr. **Butler**. There is an assorted supply of those contracts. There are some that we have on file. There are some that we don't. Of the ones that we have on file, the EIA analysis of the pre-Natural Gas Policy Act, section 104, interstate gas prices, on file at the Commission, revealed that 51 percent, and we believe this is, what we took as a statistically valid sample, 51 percent of the section 104 gas volumes are controlled by contracts that contain redetermination clauses that would be triggered by deregulation of natural gas.

Senator **Nickles**. Would they automatically go up?

Mr. **Butler**. We believe they would—well, here is what your problem is, Senator, with respect to those kinds of contracts.

You have got about three different kinds of clauses. First, you have so-called commodity related clauses. Typically those are pricing clauses that tie the price of natural gas to another commodity, in most cases number two fuel oil, which by the way, economically we think is wrong. You have a number of contracts in different locations that could be expected to escalate immediately on January 1, 1985 to whatever that price is, 110 percent of number two in New York Harbor. That is your $9, your basic $9 contract.

At the same time you have other kinds of provisions, too. You have two-party and three-party favored nations clauses. What happens is that you can have an impact. Increases in one kind of contract can trigger increases in other contracts, so the consequence is you have got sort of an, it is almost like a domino effect in terms of pricing, and we don't know what that effect is at this point. But there is a possibility that under those contract provisions we think that the average price after 1985 might very well be higher under the Natural Gas Policy Act, under phased deregulation, than you would see under a total deregulation.

Senator **Nickles**. Does the Commission have any authority to intervene in those contracts under present law?

Mr. **Butler**. I don't think that we do. That is a very, very difficult problem. I wish we did, frankly. I very much wish we did. There is a petition for a rulemaking that was filed by the Process Gas Consumers. They are basically large industrial consumers who are concerned about both the price and availability of supply. They suggested that we might—as a matter of fact, they suggested that we should—tie renegotiation down of those contracts to any pricing relief that might be afforded companies, say, in a near-deep rulemaking or in 104, 106, 109. Quite frankly, I think that is an intriguing idea.

Senator **Nickles**. Let me ask you a couple of additional questions. Let's say you had a lot of 104 gas, other gas, or 103 gas, 102 gas it would have to be, that had that fly up, and let's say that prices would escalate up to the $9 range, but let's say that was well in excess of what the market would bear. Therefore, the industrial consumers, the marginal consumers said no.

What type of a shake-out period would you expect? How long would it take for the marketplace to have people rewrite contracts where they would end up selling the gas?

Mr. **Butler**. Only the good Lord knows the answer to that question.

Senator **Nickles**. I am aware of a lot of contracts and individuals who have been drilling in the deregulated portions that are up in the $8 and $9 range. Don't most of those have contract outs?

Mr. **Butler**. We have found that there was a surprisingly small number of contracts that had market-out provisions.

Senator **Nickles**. I am speaking primarily of the contracts now that are selling their gas in excess of what the marketplace will bear.

Mr. **Butler**. The number that we have come up with, at least on the basis of the information we have so far, and I must emphasize that it is incomplete, is only about 4 percent of the volumes, of those volumes, are related to market-out or subject to market-out clauses.

Senator **Nickles**. Four percent of the 107?

Mr. **Butler**. That is what we are afraid of. The problem that has existed has been basically, one of what kind of a market we have. It has been a seller's market, and the producers have in large part been able to get not only high prices, but also substantial concessions in the form of nonprice provisions in contracts, and the exclusion from contracts of provisions like this. I think that is probably what we are going to find.

Senator **Nickles**. I know there is pipeline representatives that are here and others, but as a businessman when I look at a chart like this, and it tells me you are paying $6, $7, $8, $9 for a commodity that you can only sell for $4.50, I would think if I was entering into that type of contract that I would want to have negotiated some type of a market-out provision.

Mr. **Butler**. I couldn't agree with you more. The problem is you have got a basic sort of fact question in front of you. You don't know what it is that is driving the pipelines' behavior. Why, you have to ask yourself, are they bidding prices so high for gas? And I can concede to you that I do not know the answer. The theory of this market ordering analysis says that basically the deep cushion pipelines, those who have a lot of cheap price-controlled gas, are going to be the ones who are going to continue to bid and bid and bid because they have more old gas with which to average those prices, like above that line that we were talking about. But anomalously, if you take a look at the pipelines that are involved in PGA cases such as the one that Senator Metzenbaum referred to a few moments ago, you will find that by and large they don't appear, at least at this point in our information gathering exercise, to be deep cushion pipelines.

It raises the question whether or not there is some other institutional reason for them to be doing it or whether or not it is just bad behavior on their part. That is an open fact question.

Senator **Nickles**. Thank you, Mr. Butler. I think I will have additional questions I would like to submit to you for your response, and Senator Metzenbaum, I will turn it over to you.

Senator **Metzenbaum**. Mr. Butler, in the proposed rulemaking on incentive prices for gas between 10,000 and 15,000 feet you asked for information regarding finding rates, productivity and reserves at those depths.

Your old law firm of Baker and Botts filed comments on behalf of Exxon, Amoco, Arco, Chevron, Getty, Gulf, Mobil, Texaco, and 10 other oil companies. Those comments state that the request for, quote, "unit cost data is not required nor relevant to this proceeding."

The comments also state, "It is impossible to quantify the actual levels of gas near deep down, and the magnitude of depth should not be a determining factor in determining whether or not to get an incentive price for gas."

Does the Commission intend to get the information that it has been seeking?

Mr. **Butler**. Senator, we asked for information. We meant it when we said we want that kind of information, and we have requested that information as a matter of fact from EIA and I think they testified before you earlier today that they are in the process of preparing it. We would expect to have that information before the Commission makes a decision.

Senator **Metzenbaum**. Let me ask you one last question. I am certain you have seen the article in The Wall Street Journal, February 12, 1982, "U. S. Petrochemical Firms Face Big Threat from New Plants in Chief Energy Areas." It goes on to say:

> Already suffering from worldwide overcapacity and recession, the U.S. petrochemical industry is bracing for new competition from chemical plants being planned in Canada, Mexico and the Mideast and Asia. As a result, companies such as Dow Chemical, Union Carbide and Phillips are pulling out of the market, cancelling investments, and redirectioning research and development efforts.

It goes on to say:

> Production of large volume commodity chemicals such as ethylene and methanol is starting to switch to countries with cheap energy and cheap raw materials. What will be left for U.S. companies are higher technologies specialty chemicals, and we see some real threat to the U. S. petrochemical industry on the horizon.

Mr. Johnstone speaking for Phillips Petroleum said:

> What concerns me and I would guess would concern every American is that it isn't such a distant horizon. This Nation is more and more losing its economic employability to Japan, to Germany, to Taiwan, to Hong Kong, to Korea, and now we find that the petrochemical plants are intending to move to Saudi Arabia and the other areas where the oil and the cheaper energy is available.

Does this not concern you as not necessarily even as the Chairman of the Commission, but doesn't it concern you as an American? What is going to happen to the total American economy if we create higher prices here and we lose our businesses to lower prices in the Arab nations that have the energy supply?

Mr. **Butler**. It certainly does.

Senator **Metzenbaum**. What do you think we ought to do about it? What can be done?

Mr. **Butler**. Well, interestingly enough, the Chemical Manufacturers Association and the Petrochemical Energy Group have both testified I believe, I am not sure whether it has been before this committee, but I believe they have stated a public case in favor of phased and total deregulation of gas supplies because they are concerned, among other things, with whether or not we are going to face a rational gas market in the future or whether we are going to face gas markets that are characterized by the kind of abrupt changes that can cause chaos in their businesses, the kind of price spike that we are looking at under the Natural Gas Policy Act.

Senator **Metzenbaum**. While they are taking their businesses overseas to get cheaper energy prices, you are saying that they are publicly advocating higher prices here? That reminds me of the time when the airline industry came in and importuned the Congress to deregulate the price of jet fuel. Thereafter the prices absolutely went through the ceiling, and as you well know now the airlines are facing bankruptcy.

Mr. **Butler**. I think, Senator, that probably—I am not familiar with that, but in terms of economic principle, I am sure it was spurred by the airlines' concern for whether or not there was going to be jet fuel availability in a price-regulated regime. We learned an awful lot during the Nixon years under wage and price controls about what happens when you try to regulate commodity prices.

We wound up with shortages and we wound up with festering inflation that just literally blew the lid off the pot when we finally lifted the price controls.

Senator **Metzenbaum**. Do you think the reason the manufacturers favor that decision is so many of the chemical manufacturing companies are actually owned by the oil companies who do favor total decontrol?

Mr. **Butler**. The interesting thing is that there are an awful lot of chemical companies who are not. The petrochemical energy group is probably a pretty good example of that. They are basically companies like Dow, at least I think they used to be Union Carbide, Monsanto, so-called independent petrochemical companies. One sort of notable exception in there is Du Pont, but that is only because of the recent acquisition of Conoco.

Senator **Nickles**. Tomorrow's hearing will begin at 9 a.m.

Senator **Metzenbaum**. I have a feeling, Mr. Chairman, that the hour is rather late, and I appreciate your consideration.

Thank you very much.

Senator **Nickles**. I thank the Senator from Ohio and all of our guests. We will continue our hearings tomorrow, and hear from other people who are interested in the question of the NGPA.

The hearing is recessed.

[Whereupon, at 1:55 p.m., the hearing was recessed, to reconvene on Tuesday, March 23, 1982 at 9 a.m.]

NATURAL GAS POLICY AND REGULATORY ISSUES

TUESDAY, MARCH 23, 1982

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, D.C.

The committee met, pursuant to recess, at 9:05 a.m., in room 3110, Dirksen Office Building, Hon. Don Nickles, presiding.

Present: Senators Nickles, Humphrey, East, Johnston, Bumpers, Ford, and Tsongas.

Also present: Charles A. Trabandt, chief counsel; Howard Useem, professional staff member; and Elizabeth Moler, counsel for the minority.

OPENING STATEMENT OF HON. DON NICKLES, A U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator **NICKLES**. Good morning. Today is the second day of hearings on natural gas policy and regulatory issues.

As you might have noticed by our witness list, we have 20 witnesses today, including Congressman Phil Gramm; so if we are going to be able to finish our business today, it will be important for all of our witnesses to summarize their written statements.

Your statements will be entered into the record in full. That would allow the Senators involved more time for some questions, so if you would please summarize your statements, we would be very appreciative.

We are going to operate on the 5-minute limitation by our panelists, and also by the Senators who will ask the individuals questions so that we will be able to move forward.

We are very pleased to have with us today Congressman Phil Gramm who has been a leader in the move to make some, in my opinion, very needed changes in the NGPA. So Congressman Gramm, we are very pleased to have you with us, and we appreciate your sharing your expertise with us on the NGPA.

STATEMENT OF HON. PHIL GRAMM, A U.S. REPRESENTATIVE FROM THE STATE OF TEXAS

Mr. **GRAMM**. Thank you, Mr. Chairman. I have a prepared statement, and following your advice I would like to just enter it in the record and make a few brief comments, and then submit to questions.

Mr. Chairman, I think many of us who have sought government action on reforming the Natural Gas Policy Act were disappointed that we were bumped off the front burner by the budget. I think the President's problems were much akin to that of a physician working in an emergency room where one potential patient has had a fractured skull, another one a heart attack, and another a collapsed lung. He didn't lack for good things to do with his political capital, and I think our problem is convincing the President that No. 1, this issue was critical as compared to the budget, and No. 2, that his efforts could make us successful in rewriting the Natural Gas Policy Act and establishing an orderly transition from a current regulated price structure to a deregulated competitive system, but be that as it may, I think it is important that the committees both in the House and the Senate who have jurisdiction move ahead and legislate so that we might have a full debate and so that we might lay the framework for a consensus in the natural gas industry which runs from the burner tip to the drill tip.

I believe, Mr. Chairman, that it is imperative that we rewrite the Natural Gas Policy Act, and I believe as you listen to the broad range of witnesses here today that you will find that there is a consensus on one issue, and that is that under current oil prices and under the current pricing structure within the Natural Gas Policy Act, that allowing the Natural Gas Policy Act to move through term, producing a price spike, producing a differential between and inter and intrastate markets in terms of access to gas, is unacceptable.

I believe we have the following problems that have to be dealt with. Unless there is a precipitous decline in oil prices on January 1, 1985, under existing law, we are going to have a substantial fly up in natural gas prices which will send a tremor through the whole economy.

No. 2, unless we have an accelerated escape for the gas from the 104 classification, the old flowing interstate natural gas which remains regulated under the Natural Gas Policy Act, we will end up on January 1, 1985, with about 30 percent of all natural gas still under contract, selling at an average price of about one-seventh the market value being sold through interstate pipelines that have a regulated rate of return, and therefore engaging in average cost pricing.

This produces a real dilemma for the producing States because the pipelines can pay big premiums for new, deregulated gas, mix it with its cheap gas cushion, and sell it in the interstate pipeline. In the process the consumers in the producing States could find it virtually impossible to be competitive for their own natural gas.

Finally, Mr. Chairman, we have continuing under the Natural Gas Policy Act limitations on both the use of natural gas and access to natural gas by those who would use it. I think it is imperative that as part of the general rewrite of the Natural Gas Policy Act that we repeal the Fuel Use Act and incremental pricing so that natural gas, like all other fuels, can be used competitively and can flow to that highest value use.

Finally, I think it is imperative that we open up the natural gas purchasing market so that all consumers, no matter where they live, can have full access to all gas, so I would like to say, Mr. Chairman, that I commend you and this committee for holding this hearing and for beginning the debate. I believe it is important that we be ready to send forward a natural gas deregulation bill in both the House and the Senate, and I am hopeful that if we move past the budget debate, that the President may yet bring natural gas to the front burner so that we can address this problem and promote competition and expanded production in the market for natural gas which is clearly in the interests of the consumers all over the country.

[The prepared statement of Mr. Gramm follows:]

STATEMENT OF HON. PHIL GRAMM, A U.S. REPRESENTATIVE FROM THE STATE OF TEXAS

Mr. Chairman, thank you for this opportunity to disscuss the shortcomings of the Natural Gas Policy Act of 1978 and the need for phased deregulation of the natural gas market.

In these two days of hearings, I am sure you will become well acquainted with the problems created by the NGPA, particularly the potential "fly-up" of natural gas prices in 1985 and the "gas cushion" problem which threatens to place many natural gas pipelines and consumers at a competitive disadvantage after January 1, 1985. I would like to emphasize that the latter problem is of particular concern to pipelines and consumers in producing states such as Texas, which did not control intrastate natural gas prices before 1978.

While you will hear a wide range of opinions on the NGPA, I think almost everyone would admit that the ideal solution is to lift federal regulations on natural gas pricing and distribution and allow the market to determine the supply and utilization of this resource. Our experiences with crude oil and airline industry deregulation have shown the advantages of deregulation and I hope current reports on natural gas reserves have dispelled the notion that natural gas is a diminishing resource which needs to be "conserved" through federal management. The only major question I think is whether the U.S. can afford to make the transition between a market that has been controlled for 30 years and one in which each consumer will be expected to pay prices which reflect the true value of that commodity to that consumer.

As you know, Mr, Chairman, I believe this country must accept the challenges which accompany deregulation of natural gas. The current proved reserves of natural gas will last this country only about ten years at current consumption rates and, while there are undoubtedly tremendous reserves within the reach of existing technology, we may not have access to those reserves unless adequate incentives are provided both for new exploration and development and for continued and enhanced production of existing wells. Only phased deregulation can assure consumers that natural gas will be available when they need it.

I appreciate the initiative this Committee has taken in opening the public discussion on the NGPA and hope you will carefuly consider the provisions of H.R. 5866. I have developed this bill over the space of nearly a year with assistance from every group interested in natural gas and believe it offers a workable compromise solution to the problems created by the NGPA.

Senator NICKLES. Thank you, Congressman Gramm. We appreciate your comments and I would like for you to amplify your last comment where you said you think deregulation would be in the best interests of the consumers in the long run, because we have heard some debate and some of the witnesses today will make that comment, and there is to be witnesses who will say it is anticonsumer if we have deregulation.

Would you care to amplify possibly how you think it would be in the best interests of consumers in the long run to deregulate?

Mr. GRAMM. Mr. Chairman, let me if I may answer you by drifting back to my mode of discussion as a school teacher, just try to explain to you very simply in terms of freshman economics what those who are saying that deregulation hurts the consumer are saying in terms of supply and demand for natural gas, and why they are clearly incorrect.

If you reduce the argument down that we should have control of natural gas because it makes natural gas cheaper, what the proponents of that logic are saying and what all of these groups are sending out in the mail are saying is that the consumer is going to pay $60 billion more for natural gas with deregulation, and the consumer is going to be worse off by that amount. What they are saying is this, that if you have got some supply of natural gas, and at some fixed price you are getting a certain quantity, granted by deregulating, by letting the price go up you get more natural gas, but you have to pay more for all the other natural gas that you were getting at that regulated price, and by taking the highest price you have to pay to bring forward new gas, you are paying that much higher price for the regulated gas. That is where they get these big, inflated figures about expanded cost.

Now when you take logic only that far, it sounds like they are making a legitimate point, but the problem is this. By not getting that extra natural gas, we have to buy more of all other fuels—oil, electricity, coal, all of those fuels that are deregulated, and in order to bring forth an increased supply of those fuels we not only have to pay a higher price for them, but we have to pay a higher price for all the other oil and electricity and coal that we could have gotten had we not had to pay the higher price to get the expanded supply, or stated in one other way, if you take natural gas and you fix the price on it so that you don't let expansions in the price of energy expand the price of natural gas because its price is fixed, and you aggregate the supply of natural gas with the supply of all other energy resources, then above that regulated price of natural gas, the supply of energy must be lower because gas cannot respond to it, and therefore, given a demand for energy, prices must be higher, so in simple economic terms, regulating the price of natural gas must lower the supply of energy and must make energy cost higher, not lower, so while there will be winners and loser in the deregulation process, there is no doubt that the consumer of the energy in the aggregate will gain, the Nation will gain not only in terms of expanded economic growth and declines in imports, but also in terms of energy prices in general.

Senator NICKLES. Thank you. You also mentioned some of the problems in the intrastate markets. I am very familiar with the Oklahoma situation as it was years ago before NGPA when we weren't regulated. You basically had a very good, enviable gas price situation.

What is the situation now in Texas because of NGPA now the intrastates are regulated? Have you had a decline in your intrastate gas supplies?

Mr. GRAMM. Well, basically what we have is a dispersion of the gas, and that was the objective of the bill, but Mr. Chairman, the real dilemma would come if we allowed the Natural Gas Policy Act to run through its course because on January 1, 1985, all the gas that is currently going to the intrastate consumer would be deregulated, that roughly 35 percent of all gas that is under contract, under the classification of 104 to the interstate pipelines, would still be regulated, and its price would be on average below a dollar.

If you assume the market value of natural gas at that time is say $6 or $7 per 1,000 cubic feet, what that means is the interstate pipeline in providing gas to its customers and having a regulated rate of return can pay big premiums, as high as $5 per 1,000 cubic feet, for every 1,000 cubic feet that it has of old gas and still be competitive with the going market price, and that produces the real problem that we in the producing areas who are supplying the natural gas for the Nation may find ourselves under this quasi-deregulated situation literally denuded of natural gas, unable to get it, and see industry actually move from the source of natural gas to other parts of the country because of this artificial situation produced by deregulating 70 percent of the gas but leaving the 30 percent of the gas that has the lowest transportation cost and is produced in the area still under regulation.

Senator NICKLES. Senator Johnston, do you have any questions?

Senator JOHNSTON. Yes. Thank you, Mr. Chairman. Mr. Gramm, first of all, let me say I find your testimony nothing short of inspired. I also find your legislation so good that I plagarized some of your provisions. We have only small differences.

One of those has to do with the contract provision and what price you let gas rise to. You have an average of all of the contracts whereas in our bill we have the three highest contracts.

Would you care to state why we ought to average in all rather than the three highest?

Mr. GRAMM. Well, Senator Johnston, I started out with trying to use basically provisions that appear in most-favored-nation contracts of the standard type, but the problem I had was trying to get something that would be easy to enforce and something that after NGPA without Government collection of data could be enforceable, and so basically the concept I came up with, talking both to the producers and to the distributors and pipelines, was an average concept whereby we take simply the previous quarter's average of all contracts.

That gets us away from the very difficult task of evaluating the provisions of contracts, and what we in essence do is wash out those differentials by going to an average concept.

Senator JOHNSTON. Do you weight the contracts as to the quantity of the gas?

Mr. GRAMM. Yes.

Senator JOHNSTON. In other words, yours is a weighted average and isn't that a rather large data collection problem?

Mr. GRAMM. It is a data collection problem, and it requires a collection, but again, if you go to the three highest contracts in the field, they have got different contracting provisions and the people that I talk to who are actually going to have to make this thing work in the economy whether they were buying or selling pretty well had the feeling that they could operate better with an average concept where you didn't have to get into the specific provisions of the contracts you were interpreting if you took one or three in a field, and you could simply wash out the the higher contract which might have strange provisions and yield a high price or a low price for that matter, by going to an average concept.

I think our objective is identical. The question is how can you write a provision that is easiest for all parties involved to deal with, and I suggest that you have got some real experts here today to testify, that you discuss that provision with them.

Senator **Johnston**. Well, I wanted to open that up early on because I would like to hear from all the witnesses either in writing or orally on that question. It is a small question, but if we are going to amend the NGPA, which must be amended I think, I haven't heard anyone yet say that they want to keep it as it is, and clearly the contract provision is one of those things that must be amended, we are going to need as much data and as much input as we can get early on on that question. Whether we do it this year or whether we start off, hopefully, in January of next year, to amend this act, it is a very complicated, time-consuming job to amend the NGPA as the last 30 years war will indicate. Some of our witnesses here are too young to remember that, but I can tell you it took a long, long time, and we need to hit the ground right on that question. So I would like to invite everyone to speak to that particular issue, either to speak to it or to give us a little letter in writing.

Now, No. 2, you capped 107 gas at 70 percent of the crude oil price, and with respect to existing contracts, you freeze those. We have no such provision, and let me suggest to you that our feeling was that that which is deregulated should remain deregulated. It is very hard and very difficult and unfair in our view to come back and put a cap on that which was drilled under the assumption that it would be deregulated, and some of our friends that drill those deep wells in the Anadarko Basin——

Mr. **Gramm**. I have heard of some of those people.

Senator **Johnston** [continuing]. Are not too happy with deregulation anyway. Do you think we can make them happy if we go with my provision which will keep them deregulated?

Mr. **Gramm**. I don't think there is any doubt about the fact they would be happy with that provision. Let me just explain why in trying to put together the bill that I put together that I decided to try to move toward a cap there.

When we set out the provision which allowed deep drilling, it was done in a period where we really saw no hope for getting down deregulation, and with a regulated market which clearly had a price below the free market clearing, we saw with this deep gas a perfect example of what this regulated cushion does in taking prices above an equilibrium base because consumers wanted the gas, the pipeline is able to make that gas with cheaper, regulated gas, which drove prices up to very high premiums.

A general deregulation would not produce prices that high, so the objective I was trying to achieve was to get an orderly transition by capping prices at their existing level, except where contracts had been let, not allowing anymore of those wells to be drilled in the 3-year period.

I don't have that strong a feeling about it. In a sense, we create a false impression in the public's mind that the price of that 107 is really the free market price when in fact that price is being produced because virtually all the gas is under regulation. That is just a small safety valve kind of deregulation, and the result is producing nothing indicative of what will happen with a general orderly deregulation.

Senator **Johnston**. One more quick question—as an economist, once we have the so-called deregulation that takes place under NGPA on January 1, 1985, isn't it a fact that at that point with the fly up that the consumer is going to pay the equilibrium average price whether we are deregulated as your bill or my bill would provide. Are not those prices going to seek an average equilibrium so the amount paid by the consumer is going to be about the same whether it is under deregulation or not?

Mr. GRAMM. Senator, I would take it further than that. I would say that not only is the consumer going to pay the deregulated price whether 30 percent is regulated or not, but because of the fly up and because of the contracting problem, unless we rewrite NGPA, the consumer in the interstate market is going to pay far more under NGPA than he will pay under an orderly deregulation bill such as the one provided for in your legislation. I think it is very clear. I think you will find today in discussing the problem with the distributors and pipelines that while they have concerns about a deregulation, a total deregulation bill, their concerns about NGPA are at least equal to or surpass that concern.

Senator JOHNSTON. Excellent answer—thank you, Mr. Chairman.

Senator NICKLES. Senator Ford, do you have any questions?

Senator FORD. I'm afraid I might be outnumbered here! Phil, let me ask you something if I may, and I didn't have a chance to get here earlier and I apologize for that. We were looking at some figures yesterday if we go ahead with the phased deregulation, your bill or Senator Johnston's bill, something along that line, it is going to increase some cost to the consumer in the next 3 years around $10 billion. I find that in Kentucky pipeline A, for instance, as I brought out yesterday, has a large percentage of old gas, where pipeline B has a small percentage, and if you use this phased, or increase the old gas, then you devastate a pipeline or distribution system that has the lower cost gas and impose a hardship on them, where the other one, just by the law, and in the changes, gives them a great advantage, and it seems like to me this bill is unfair to those that have gone out and got a lot of old gas with a large percentage of folding in their new gas. It seems to me it is unfair in what it is going to cost the consumers in the near term rather than that bubble everybody is worried about, or the spike, in January 1, 1985.

I know you are going to refute that. That is the reason I asked the question.

Mr. GRAMM. Let me say this. First of all, I think we have an opportunity in a comprehensive deregulation bill to do a lot of things that will benefit everybody, and to produce a package that will on average leave everybody better off, and let me explain what I mean.

Under existing law—let me just talk about NGPA. Under NGPA we were to have deregulation of about 70 percent of all gas on January 1, 1985. We are going to have, assuming oil prices hold at or near their current level, or even if they have a moderate decline, we still are facing almost a doubling of natural gas prices at the wellhead for that 70 percent, a tremendous shock going through to the interstate consumer.

We have got a contracting problem which basically means that under regulation, a lot of contracts were negotiated with deals that now look strange. For example, somewhere around 5 percent of all contracts have gas prices upon deregulation tied to a premium over other fuels like 110 percent of No. 2 oil.

Senator FORD. Why don't they tie it to coal and it will come down?

Mr. GRAMM. Anyway, these contracts are law. They exist. Under NGPA they are going to become operative. Five percent in and of itself is not that big a problem, but over 70 percent of all gas has most-favored-nation contracts, and under existing law not only will we have a price spike, but price will rise above that spike, and we will have a real transition problem for both the consumers and for the producer, so I believe that by rewriting NGPA and by having an orderly transition and by preventing that fly up above equilibrium by contracting provisions, that protects the consumer, that we can offset a substantial part of the impact of this disruption, but finally, let me address the old gas issue.

Now, I really want to address it on two levels. No. 1, there is a relationship between the price of old gas and the amount of gas being produced, and I think one argument that can be made and should be made is that by deregulating the price of old gas, we do prolong the life of those deposits, and that is a benefit to the consumer, but finally, you have got to remember that if we leave old gas regulated, that while we may produce distribution impacts among pipelines in that process, we are going to create a tremendous distribution impact among parts of the country. Those parts of the country that have committed old gas are going to have tremendous advantages over other parts of the country, and those advantages will cause industry to move, trying to seek the lower price, availability, and I think that it is imperative that we come up with a compromise bill that deregulates all gas so that consumers in every part of the country will be treated the same, and hopefully in that process we can benefit the consumer by preventing the kind of disruption that might occur as we try to go from regulation to deregulation.

Though we know deregulation is in the long-term interest of the consumers, these strange provisions and contracts that were negotiated during regulation can really produce a lot of hardship in the interim, and I think that is the benefit that can be had from rewriting NGPA.

Senator FORD. Phil, you have leaned on the contracts for the last 5 minutes. Are you saying we ought to address those contracts in this legislation?

Mr. GRAMM. I think it is imperative that we do that, Senator.

Senator FORD. All right. You say in your statement, you indicated that the move to the Gulf States was not really the right thing to do. That is where the gas was and people moved to the Gulf States. That is where they found it.

Let me tell you what I find in all States that I have contacted. I haven't contacted all of them. I have some people that will give me information as it relates to distribution companies. They have the largest unpaid balance in their history. Their line item is going up month after month of inability of people to pay the higher price now, and that becomes a political reality, and I'm sure you understand that.

Mr. GRAMM. I do.

Senator FORD. All right, so we have got a residential $20 average increase each of the next 3 years according to testimony from the Department yesterday under the present term, and if we take the phased deregulation, then we have an $80 a month increase, or $80 average or 240 as compared to 60, and basically you come out, if you have that spike, of where everybody says it is going to be on January 1, 1985—with the spike, of course, you come out the same place. But right now it is very difficult for a fellow who is walking the streets without a job to see that $240 facing him. Senator Bumpers gave us an analogy yesterday, with the 25 percent in place, of a $20,000 medium income family of four, with one breadwinner, that the increase in energy would within $3 or $4 dollars as I recall take up all his tax cut, and then in the rippling effect that it would have it would really become massive.

Now we are back basically where we were when we put the cap on and tried to regulate it earlier, but now we are getting down to an economic problem. I hope you realize the economic problem we have in some of the consumer States, and not the producer States, and we are trying to say we are going to raise your price even higher.

Mr. GRAMM. Senator, let me respond in the following way. First of all, we are not talking about in the existing regulatory process versus deregulation. We are talking about what is going to happen under existing law if we do nothing versus what we can do with an orderly transition bill, and I think that you and I could agree on a consensus bill that would clearly make the consumer better off than he will be under the Natural Gas Policy Act.

Senator FORD. In the near term or the long term?

Mr. GRAMM. In both; we are talking about a phaseout period of 2 years which is a fairly short time period.

Second, it is true that deregulation will cause gas prices to rise, but it is also true that it will cause gas supplies to rise, and that gas will substitute for other fuels that are far more expensive because not only will we see the consumer paying a higher price for gas and getting more gas, but since he will be buying less of other energy as gas becomes available, especially for industrial use, if we repeal things like incremental pricing, but the reduced demand for other fuels, oil in particular, will put strong downward pressure on oil prices and by regulating the price of natural gas, what we have really done is limited the amount of natural gas that is produced, and it has forced the consumer to pay higher prices for other energy sources in order to substitute for the shortfall we have produced.

Senator FORD. You are going to have a difficult time convincing me, and I regret it because I supported the bill long and hard last time, and coming from a consumer State, I voted for the Benson/Pearson bill over here, but we did not deregulate old gas and so that was the thing that everybody was working so hard for, and I supported that legislation.

Now you are asking me to come and go further, deregulate even more, and we are getting ready to have the New Federalism and give the States the ability to impose windfall profits tax. I heard the President say that. You did, too, didn't you?

Mr. GRAMM. I did.

Senator **Ford**. We are going to have four or five States who are going to form a confederacy and have a foster program. They will have to adopt a couple of States to take care of them under these circumstances.

Senator **Johnston**. We don't want Kentucky.

Senator **Ford**. If you didn't have Kentucky playing ball in New Orleans, you wouldn't have the crowd, and if you weren't serving our whisky on Bourbon Street you would still have the malaise.

Where were we?

Mr. **Gramm**. Senator, let me say that Senator Johnston doesn't speak for Texas. We might want Kentucky.

Senator **Ford**. I served a lot of time in Fort Hood. I saw everybody on 100,000 acres. For that part of it, you can keep it.

Phil, getting back to more serious matters, I am in a coal producing state and should be in favor of raising every other fuel as high as it can be raised so we can sell our coal which would be somewhat less, and I think you are going to find a track in this Congress—over in the Senate the Republicans have to depend on the Democrats maybe to get a little relief, but you are going to find a track is going to make it easier to burn coal, and so I ought to be for whatever it takes to get the gas price up so high that everybody is going to turn to coal, but I have to look after Kentucky consumers.

I was told yesterday that you ought to look at what is going to be higher, oil or gas, and convert periodically like watching the stock market. That doesn't make any sense to me, so if you can find a comprehensive bill that is in the best interests of the consumer, I am amenable, but it is going to be very difficult I think from what I have looked at, and the way you are going to increase the cost in the next 2 to 3 years to the consumer 400 percent which the Department of Energy, EIA, testified to yesterday, it is going to be very difficult for me to do that right now, right now.

Mr. **Gramm**. Let me just say, Senator, I think that is why I am so glad to see you all moving ahead with holding hearings, because I think we need to try to see if we can come up with a consensus that will meet the broad range of concerns we are talking about here so that if we do have a push to deregulate, that we can try to move ahead with the consensus bill that addresses all these concerns.

Senator **Ford**. Deregulation, you know, is a big word around here for a long time. I think the airlines would like to have control back and some of the constituents and airports would like to have it back, too, so the airlines would come back. They have left, you know, and the transportation is not quite as good, and you let the open market settle everything, at some point we have to give some guidance, and we have to give some leadership and some incentive. I think the Federal Government is backing off of its leadership and its incentive in trying to take the Federal deficit and dump it on the States and a few other things.

Thank you, Mr. Chairman.

Senator **Nickles**. Senator Humphrey?

Senator **Humphrey**. I have to say on the airline deregulation, I sure do like that $30 fare that exists between Washington and Boston which it used to be more than that figure.

Senator **Ford**. Let me just say it is $224 to Lexington, Ky., and I started out at $148 round trip to Owensboro, and now it is $218. You figure that one out.

Senator **Humphrey**. When did you start?

Senator **Ford**. I started 6 years ago, 7 years ago, at about the time you started being a copilot.

Senator **Humphrey**. I started a good deal before that. I didn't have the benefit of Congressman Gramm's testimony, but judging by the necktie he is wearing, I think I know what he had to say. That is an Adam Smith necktie, isn't it?

Mr. **Gramm**. It is.

Senator **Humphrey**. I don't have any questions at this point, Mr. Chairman.

Senator **Nickles**. Thank you. Senator Tsongas.

Senator **Tsongas**. Will you stand up so I can see the rest of your attire?

Mr. **Gramm**. My pants are the same color as my coat.

Senator **Tsongas**. At least you're being consistent.

Mr. **Gramm**. That is correct.

Senator **Tsongas**. Mr. Chairman, I intended to be here yesterday but was detained in the hearing on the nuclear freeze, and so I would like to make a statement now if I can. I don't have any questions for the Congressman. If he has any other dialog with members of the committee maybe you should do that now, but let me give my statement afterward.

Senator **Nickles**. We have nothing else. We appreciate your assistance and leadership in your role.

Senator Tsongas?

STATEMENT OF HON. PAUL E. TSONGAS, A U.S. SENATOR FROM THE STATE OF MASSACHUSETTS

Senator **Tsongas**. Mr. Chairman, this is a very interesting issue not only here on the Hill, but obviously in the White House as well. The President's position on this issue has been intriguing for all sides involved. I think everyone thinks he is on their side somewhat—which is the ultimate act of political finesse.

I come from an energy-dependent State, and yet I voted for decontrol of oil. I think I was the only member of my delegation to do that and feel very strongly that it was the correct step to take, in view of the fact that we do not have a viable energy policy.

In normal times I would have been in favor of deregulation of natural gas. But I am going to outline the reasons why I do not support it.

I have a statement here which I will submit for the record, but let me mention a couple of my reasons now.

One, obviously is that we do not have an energy policy in this country. What we have is a free enterprise system for conservation and renewables, and a subsidized system for Clinch River, et cetera, et cetera. This flies in the face of every study on energy that has come out in the last several years. The administration cannot have it both ways.

This committee is going to be asked to come up with money for the Three Mile Island nuclear powerplant. Last year Congress voted $180 million for the Clinch River breeder reactor. Meanwhile we are cutting back the solar budget by 81 percent and conservation by 87 percent. I would say to those in the audience who are in support of deregulation and who triumphed last year that sometime down the road you are going to have to live with that reaction, and this is the time.

We decontrolled oil, and there was a deal. The deal was we will decontrol oil and we will have a windfall profits tax. That deal was struck, and it became the law.

What happened the next year? The same people who made the deal saw an opportunity, went back, and rolled back the windfall profits tax. You won, but you lost, because now you have no credibility. There is no confidence on anybody's part that a deal is a deal. We live in a very Darwinian age, and that is fine as long as you have the votes. What happens in such a situation is that power corrupts. Absolute power corrupts absolutely. You set in motion the anger which fills the vacuum with a political constituency. The windfall profits tax was a bipartisan problem. It was the Democrats in the House who were bidding with the President to remove the tax. However, that decision helped to create the imbalance we have in the budget.

So No. 1, we don't have a consistent policy. The free market operates for some; subsidization operates for others.

Second, those who took advantage of the political situation undid the deal that was made. That is fine, but don't expect to come back. There is an old expression in Boston which is, I suspect, used elsewhere. It says, "Fool me once, shame on you; fool me twice, shame on me." I feel very strongly about that.

Third, there is a concern over oil. To the extent that we raise the price of natural gas, the price of oil—the alternative of gas—becomes more attractive. Since we are trying to get away from our dependence upon foreign crude, that would have the negative effect of enhancing that dependence.

The final issue is the cost. If indeed deregulation is so good for the consumer, why is it that the consumers are opposed to it and why indeed is it that, for example, most of the utilities are opposed? All the utilities that I have spoken to in my part of the country are opposed to deregulation. The argument for deregulation from the consumer's perspective is not compelling. It has not been compelling to the people who sell the gas at the utility level at least in my part of the country. The effect that decontrol will have on the poor and the elderly has already been spoken to. But I would hope that at some point down the road in this country's energy policy we would realize that a winners-and-losers psychology in the long term violates consensus. If one is to take a position to viscerate all those programs that involve renewables and conservation, go ahead and try to fund Clinch River—which I think even the Advisory Committee is opposed to—and strike a deal on oil and then renege on that deal. Those are victories in 1981, but you sow a seed, and that seed has a harvest. The harvest is in 1982.

I for one voted for decontrol of oil and was very strongly in support of that move, and I would like to have been able to have voted for deregulation of natural gas. I cannot for the reasons stated. Hopefully at some point under this administration, hopefully sooner than its demise, you will have the administration turn around and come up with an energy policy that acknowledges the need for consensus and does not create a situation of winners and losers—which is in effect what happened last year.

I thank the chairman.

[The prepared statement of Senator Tsongas follows:]

Senator Paul Tsongas

Statement to the Committee on Energy
and Natural Resources

Mr. Chairman, I have supported energy policies that give realistic price signals to consumers and producers. Our energy resources are finite and diminishing: their price should reflect this reality.

This principle has led me to support the decontrol of oil, and to vote consistently for higher gasoline taxes. In general, to price energy far below its replacement cost doesn't make sense. It slows our progress toward energy efficiency and alternative energy resources.

But today I must raise my voice in opposition to decontrol. Natural gas should not be decontrolled at this time for 3 basic reasons:

- First, it can't be justified in the context of an overall energy policy that is irrational.
- Second, it can't be defended during a recession that has 9 million Americans out of work.
- Third, it can't be accepted with its basic element of unfairness -- poking another hole in the "safety net."

In the face of these realities, decontrol of natural gas is an idea whose time has not come.

Administration Energy Policy

The Administration's energy policy is simple. Simple faith in a supposedly free market, combined with special help for favorites like the Clinch River Breeder Reactor. In spite of the current oil surplus, a policy of "free enterprise" and a few high-priced subsidies just won't work.

Higher energy prices, by themselves, will not get the consumer to make cost-effective investments in energy efficiency and renewables. Why? Because the average American can't afford it. But the Administration is trying to stop the Solar and Conservation Bank. This would have helped people pay the major cost at the front end. The President has deferred last year's $125 million appropriation; he is ignoring a $25 million appropriation agreed to by a House-Senate Conference this year.

On top of this, the Treasury Department is talking about killing the tax credits available for such improvements now. So even those who can put together the initial investment are going to get a cold shoulder from the Administration.

Every scientific study in recent years has concluded that renewable resources and conservation are central to our energy future. The Administration takes a laid-back, gradualist approach. In fact, its pronouncements and policies don't even face up to the basic realities of our energy dilemma. The Energy Department and the OMB are hacking away at our energy future. For FY 83, they plan a 81% cut in solar and other renewables, and an 87% cut in energy conservation programs. These cutbacks are extraordinary false economies.

Overseas, our competitors must be laughing. Clearly, other industrial nations are not making the same blunder. France, Sweden and Japan, for example, are planning major increases in programs for conservation and solar energy. Our competitors are focusing on new technologies for export, and on energy efficiency for industries that must be competitive internationally.

Overall, it can be said that there is no U.S. energy policy overall. The Administration's patchwork of cutbacks and sacred cows is incoherent. And while it hurts consumers, it also endangers our national security by leaving us far too dependent on imported oil. Indeed, decontrol of natural gas could very well lead to increased use of foreign oil. Higher prices would make some users switch back to oil -- or decide not to switch to natural gas.

Just this weekend the President vetoed the Standby Petroleum Allocation bill. And the President's FY 83 budget cuts the fill rate of the Strategic Petroleum Reserve. We can forget the gas lines of 1974 and 1979, but the danger they symbolize will not go away.

Decontrol and Recession

Natural gas decontrol is wrong in terms of energy policy. It is also wrong in terms of economic policy. Americans are struggling to make ends meet -- particularly the 9 million of them who are unemployed. The jobless rate is close to a post-Depression record. And in some industries and states, there is a depression today. This is not time to add higher prices for natural gas to our economic burdens.

The prospect of a national economic depression is no longer unthinkable. Decontrol of natural gas -- at this time -- would be one more backwards step toward economic disaster.

Higher prices for natural gas would be a burden for Americans generally. But it would be a very harsh burden for our neediest citizens -- the unemployed, many of our elderly, every American with a low income. The Administration has cut social service programs across-the-board, and it has attacked energy programs for those in need. Natural gas decontrol now would be the knockout punch.

Even though many advocates of decontrol favor more help for the poor, the President disagrees. While Congress has authorized $1.8 billion for fuel assistance, President Reagan has fought to cut it to $1.4 billion. He also refused to spend the $112 million authorized to weatherize the homes of low-income families. Without federal aid, higher prices simply are not going to make poor Americans use less energy -- because they can't afford the investment.

For low-income Americans, decontrol of natural gas would be ineffective and unfair. An energy "safety net" is an absolute prerequisite to decontrol.

Another basic unfairness of decontrol would be regional. It would transfer millions of dollars from the Northeast to the Sunbelt. This effect comes on top of a pattern of federal spending on energy that benefits Southern and Western states.

I must conclude that decontrol of natural gas is totally unjustified at this time. It doesn't make sense in the absence of an overall energy plan, or in the presense of a painful recession. It would be an extreme hardship to millions of Americans whose suffering has increased in the past year. It would hurt people for no purpose. I urge the Committee to give this policy our resounding rejection.

Senator NICKLES. For our first panel today we have a large panel. We have Gene Wright who is chairman of the Natural Gas Supply Association. Would you gentlemen please come forward—Danny Conklin, chairman of the Natural Gas Committee who represents the Independent Petroleum Association of America; Henry Taliaferro representing the Independent Gas Producers Committee. We have Bud Lawrence of the American Gas Association; Arthur Seder, representing the Interstate Natural Gas Association of America, and J. T. Terrill, president, Coalition of Intrastate Pipelines; also Mr. Walzel who is president of the Houston Natural Gas Pipeline Co.

We welcome you to our committee, and I see you have found your places.

Mr. Wright, welcome. Will you please begin?

Mr. WRIGHT. Thank you very much.

STATEMENT OF H. E. (GENE) WRIGHT, CHAIRMAN, NATURAL GAS SUPPLY ASSOCIATION

Mr. WRIGHT. Good morning, Mr. Chairman, members of the committee. I am Gene Wright. I am an independent oil and gas producer from Gilmer, Tex. I am appearing here before the committee today as chairman of the Natural Gas Supply Association, a group of major and independent producers of natural gas who market over 90 percent of the gas produced in the United States.

Mr. Chairman, we have a complete statement and we have a summary statement, so I will be brief and try to stay within my 5-minute limit.

Senator NICKLES. Thank you.

Mr. WRIGHT. If that is acceptable; when this committee held its hearings last November on implementation of title I of the Natural Gas Policy Act of 1978, witness after witness told of the difficulties and distortions this law has created. Many point out that a sluggish economy masked a dangerously deteriorating situation. Producers and others noted that the current gas pricing policy is depleting the Nation's gas reserves, and that it distorts the manner in which the producing industry allocates its capital and manpower resources in the search for and the development of our natural gas resource base.

The act in fact provides little meaningful incentive for producers to seek additional reserves in already existing producing areas or to prevent premature abandonment of marginal properties. Moreover, the act gives unequal economic weight to various new gas drilling opportunities. This committee has already heard much about the so-called deep drilling distortion. Suffice it to say that by directing capital for natural gas drilling to high cost, high risk wells below 15,000 feet, the NGPA has effectively embargoed gas drilling and production capital expenditures in vast portions of our domestic reserve base.

On the disordering problem, under the NGPA, lower cost regulated natural gas and higher cost unregulated natural gas are produced in different regions by different producers, purchased by different pipelines both interstate and intrastate, and transported to different regions of the country for use by different consumers. Obviously some producers have more low-cost gas than others do. Some pipelines have a substantial supply of low-cost gas or a deep cushion. Other pipelines have little of this cheap gas supply or a shallow cushion.

Users and eventually consumers are either penalized or benefited by the situation of the pipeline that serves them. The tragedy is that in 1985 these circumstances will not end. In fact, they may well worsen. In some States and among some gas-intensive industries such as food, textile, paper, chemical, and glass industries, to name just a few, the economic hardship could be severe under this disordering program that is and will be occurring in the natural gas market.

It was discouraging to the producers, therefore, when the President at the urging of the congressional leaders decided to delay pursuing changes in the NGPA at this time. Nevertheless, we are gratified by the President's strong statement of continued support for phased deregulation of all natural gas prices as an integral step toward a sound and reasonable national policy.

Fortunately, congressional consideration of the natural gas policy issue has been significantly advanced by the excellent work of Senator Bennett Johnston and Congressman Phil Gramm. Senator Johnston's bill, S. 2074, and Congressman Gramm's legislation, H.R. 5866, represent major steps forward toward achievement of the consensus approach to a natural gas policy.

Mr. Chairman, I am going to forego any further statement at this time in favor of questions.

[The prepared statement of Mr. Wright follows:]

TESTIMONY OF H.E. (Gene) WRIGHT
CHAIRMAN, NATURAL GAS SUPPLY ASSOCIATION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
MARCH 23, 1982

My name is Gene Wright and I am Chairman of the Natural Gas Supply Association, a group of major and independent producers of natural gas who market almost 90 percent of the gas produced in the United States. The Association does not represent pipelines or distribution utilities. I am also an independent crude oil and natural gas producer from Gilmer, Texas.

The previous administration effectively wrote off natural gas as a major contributor to the nation's future energy mix, claiming that the resource was so close to exhaustion that national policy should concern itself with demand management and forced conservation. Because of the perceived inability of the gas producing industry to respond substantially to incentive pricing at the wellhead, the National Energy Acts of 1978 provided for future limited decontrol of limited quantities of natural gas, increased regulation of natural gas, and massive intervention in natural gas marketing through incremental pricing and contraints on industrial gas usage. We abandoned our common sense in 1978 when we accepted as a working premise for legislative policy the unfounded conclusion that natural gas was a resource without a future, and that accordingly, the national interest would be served by the imposition of greater regulation on the natural gas industry. These false premises led to flawed legislation.

There is more natural gas potentially available to this country in the future than this county has found, produced and consumed in its entire history. According to the U.S. Geological Survey, there remains a total resource potential of over 730 trillion cubic feet of natural gas. This is an estimate and it can only be an estimate because of the vast proportion of our sedimentary basins which have not been explored at all.

We should never again write off this enormous natural gas resource base in determining national energy policy, but neither should common sense let us err in setting our policy without a realization that natural gas potential can become proved natural gas reserves only if free market incentives are permitted to provide an economic climate conducive to sustained drilling and production activities.

Our common sense should impel us to search for a natural gas policy which recognizes, reasonably and objectively, the simple fact that we have the potential for supplying much of the energy needs of our economy for many years to come through natural gas, if we provide the political and economic tools to make physical development a reality.

Reserves Tilt. While gas well drilling reflected a sharp surge during the decade of the '70s in response to increased economic incentives, reserves estimates indicated we were still depleting our natural gas inventory, consuming gas more rapidly than we can develop replacement stock.

There has been a dramatic increase in the share of reserve additions from gas found in association with oil. It appears that increased oil drilling - not gas drilling - is largely responsible for recent improvements in gas reserve additions. According to the Department of Energy, reserve additions of natural gas found in association with oil increased more than 200 percent between 1977 and 1980. Reserve additions of gas not found in association with oil have been declining.

Natural Gas Reserve Additions
Associated versus Non-Associated Additions
(Billion Cubic Feet)

	Associated	Non-Associated
1977	1,583	11,395
1978	1,813	15,183
1979	1,904	13,121
1980	4,937	11,234

Department of Energy Estimates

In 1977, about 7 times as much non-associated gas was added to our reserves as compared to associated gas. But in 1980 -- the last year for which figures are available -- non-associated gas contributed only a little more than two times as much additional supply as associated gas. Non-associated gas production declined 3 percent while associated production remained constant.

Over the previous two years, oil drilling has increased at an average rate of 39 percent, gas well drilling over the same period of time increased at an average rate of only 10 percent.

Drilling Distortions Caused by NGPA. The pricing artificialities of the NGPA also produce gross distortions in the manner in which the producing industry allocates its capital and manpower resources in the search for the development of our natural gas resource base. This misallocation adversely affects available supplies of natural gas. First, NGPA provides little meaningful incentive for the producer to allocate available capital to maximize production in already existing gas producing areas, or to prevent premature abandonment of marginal properties because so-called "old gas" remains price controlled in perpetuity at artifically low levels. Thus, NGPA encourages inefficiency in production of proved reserves. The FERC special relief provisions and the stripper gas provisions of Section 108 of the NGPA are inadequate to remedy the problem. Second, NGPA gives unequal economic weight to alternate new gas drilling opportunities. Under the NGPA a gas well having a completion location below 15,000 feet produces gas which is not subject to federal wellhead ceiling prices. The current market for natural gas in this high-cost, high-risk category is in some areas as high as $10.00 per million BTU's at the wellhead because the pipeline purchaser can "roll in" these prices with all other gas purchases. Under the NGPA, if the producer's well is bottomed at a completion location above 15,000 feet, the gas produced from the well is subject to the complex pricing regulations of the NGPA, with an applicable ceiling price generally no greater than $2.00-$3.00 per million BTU's. Yet, according to estimates of the Potential Gas Committee at the Colorado School of Mines, there may be twice as much recoverable natural gas at depths less than 15,000 feet deep onshore and in water less than 200 meters deep offshore than is the case below 15,000 feet.

The NGPA has thus created a situation where drilling capital is directed to the high cost, high risk range below 15,000 feet, and to oil production at any depth, because of the obvious relative economic discentive of spending the same drilling dollar to seek natural gas at depths less than 15,000 feet.

Drilling statistics compiled by the American Petroleum Institute demonstrate that the Natural Gas Policy Act distorts drilling behavior.

A comparison of wells drilled by depth indicate a declining rate of increase between 0 to 15,000 feet. Although drilling is more expensive as one goes deeper, the large increase in drilling below 15,000 feet is attributed to current gas pricing policy.

TOTAL GAS WELLS DRILLED

Depth (feet)	1980	1981	Change
0-5000	8944	10388	16%
5,000-10,000	4733	5246	11%
10,000-15,000	1731	1758	1%
15,000 & Below	322	428	33%

Annual Summary of Drilling Statistics, API, March 19,1982

The perverse incentives of Title I are encouraging producers to explore for easily recoverable shallow gas or very expensive deep gas while neglecting the development of resources at intermediate depths.

Exploratory drilling at near deep levels show that in 1981 the number of gas wells drilled between 10,000 to 15,000 feet declined 5% while exploratory deep drilling increased 44 percent.

EXPLORATORY NEAR DEEP AND DEEP GAS WELLS

Depth (feet)	1980	1981	Change
10,000-15,000	360	342	-5%
15,000 & Below	109	157	44%

Annual Summary of Drilling Statistics, API, March 19, 1982

Market Disorder. A very important reason for immediate legislative reform of the NGPA lies in the chaos which will be created in 1985 if the NGPA structure is left unchanged. In 1985, certain categories of gas will move out from under wellhead price controls, while other categories of gas will remain subject to the restrictive pricing formulae mandated by the NGPA. The price disparity in 1985 between different classifications of natural gas -- which are meaningless to the consumer who receives the same commodity from a price-regulated well as he receives from a deregulated well -- will be enormous, and will tend to diverge further over time as deregulated natural gas prices are affected by other uncontrolled energy sources, while regulated prices remain relatively constant under the NGPA pricing formulae. This price disparity promises at least two areas of bitter conflict in 1985 and beyond.

First is the issue of differential pricing to consumers. In 1985, just as is true today, lower-cost regulated natural gas and higher-cost unregulated natural gas will be produced in different regions by different producers, purchased by different pipelines -- both interstate and intrastate -- and transported to different regions of the country for use by different consumers. Some producers will have more low cost gas on the market than other producers; some pipelines will have substantial supplies of low cost gas or a deep cushion, other pipelines will have little of this supply or a shallow cushion and some users will receive the benefit of more low cost gas than other users. Thus, those industrial firms which are the beneficiaries of low cost natural gas will derive a substantial competitive advantage over rival concerns which are forced by the vicissitudes of the market into purchasing higher-cost gas. In short, the pressure for some form of "entitlements" program to equalize natural gas costs among purchasers may become irresistible, as the pressure became irresistible for an entitlements program for crude oil purchasers once a two-tier crude oil pricing structure was created.

Second is the issue of access to new supplies of natural gas. For natural gas coming out from under NGPA price controls, as well as natural gas newly found after

1985, a premium price can be offered by some, but not all, pipeline purchasers. Those pipeline companies having committed to their systems a long term supply of low cost, permanently regulated natural gas will be able to offer above-market prices for new gas supplies for, since pipelines average all purchased gas costs together in determining their resale rates. A pipeline having a cushion of low cost gas can bid premium prices for new supplies without raising its average cost above competing fuels. The extent of the pipeline low cost gas cushion varies from company to company, but clearly those pipelines with a deep cushion will be in a position to out-bid those pipelines without a cushion, and thereby command virtually all new gas supplies entering the market after 1985. Unequal purchasing power, created by the inherent subsidy of low cost regulated gas, will continue until such time as the cushion has been dissipated by continual averaging-up of the cost of purchased gas. This competitive advantage in the procurement of new supplies of natural gas by some pipelines can produce severe strains on the abilities of those pipeline purchasers not able to compete for new supply increments to meet their system needs. These strains might also fall upon the customers served by those disadvantaged pipelines.

Currently, many intrastate pipelines are complaining because of the relative difference of gas cost with interstate pipelines.

Interstate pipelines also show a considerable disparity in system supply prices. As a result of the range in costs (See Appendix I) certain industries in certain regions will have a cost advantage on their fuel. This phenomena will not only occur interegionally but manufacturers in the same region, and even the same state will benefit or bear the burden of the supply position of their pipeline.

To the extent that those industries, such as food, textile, paper, chemical, petroleum, stone, clay, glass, etc., primary metals, fabricated metals, machinery and transport equipment, find natural gas essential for process and feedstock use are located on shallow cushion pipelines, they may face shortages prior to 1985 if the NGPA is allowed to run its course.

Discussion of Deregulation. Representatives of some consumer groups have argued that the impact of natural gas decontrol would be disastrous. These groups made the same claim in their opposition to oil decontrol. The actual situation which developed after oil was decontrolled was exactly opposite of what these groups projected.

As a nation we have only recently recognized that price controls on oil were wrong because they encouraged consumption, reduced domestic production, increased imports, and hid the real cost of oil from the American people. Price controls on natural gas are just as wrong for the same reasons. By freeing domestic oil production, the Reagan

Administration expedited a program begun under the Carter administration which was designed to open the door for further exploration and development of additional domestic supplies. Recent experience with the removal of price controls on oil has demonstrated that a free market does respond. In response to rising crude oil prices under phased decontrol and the expectation of complete decontrol in 1981, virtually every oil drilling record was broken in 1980. Drilling activity increased at an even faster rate in 1981. In addition, crude oil decontrol has brought about reduction in imports and has increased conservation. Americans are now witnessing the inability of OPEC to sustain higher prices and are experiencing price reduction at the gasoline pump.

The Citizen/Labor Energy Coalition and Energy Action have purported to assess the future economic effects of natural gas decontrol. A review of these studies by Foster Associates for the Chemical Manufacturers Association finds that these reports are wrong in their facts and assumptions. We concur.

The CLEC and Energy Action reports are erroneous in three basic ways. First, they inflate estimates of future natural gas prices under decontrol to arrive at groundless "scare" conclusions. High price estimates are based on several flawed assumptions about oil and natural gas markets. These are:

- That natural gas prices would rise under decontrol to equal crude oil prices -- rather than to the lower levels of competition of alternative fuels such as residual fuel oil.

- That crude oil prices would necessarily increase rapidly in the future.

Second, the CLEC and Energy Action reports ignore factors which restrain gas price increases to consumers under decontrol. They implicitly assume:

- That the provisions in long-term contracts would not effect gas price increases.
- That the incremental increase in residential prices would match those of wellhead prices -- i.e., that if wellhead prices rose 20 percent, residential prices would also rise 20 percent.

Third, the CLEC and Energy Action reports ignore the ways in which the American economy would adjust to -- and considerably soften -- the impact of natural gas decontrol. The studies ignore:

- That natural gas prices neither influence, nor respond to, changes in gas production and consumption -- despite evidence that these responses have occurred with oil decontrol.
- The benefits to consumers resulting from production and conservation would outweigh costs of decontrol.

Changes in the average wellhead price of natural gas have not caused correspondingly large changes in the prices end-users pay for natural gas. This is due to the relatively large transmission and distribution charges to bring natural gas to the consumer. According to the Energy Information Admininistration, the average annual rate of growth in real wellhead prices was about 20 percent while the average annual rate of growth in residential prices was 7 percent. Thus, during a period of adequate gas deliverability, price increases at the wellhead are not passed on to the consumer on a dollar for dollar basis. Yet, in a period of gas shortage, transportation and distribution costs increase as less gas flows through the system and these increased costs raise the price to the consumer even though the producers prices are not increased.

In a November 1981 study, the American Gas Association suggested that the price of deregulated gas may be "ratcheted up" above long-run market clearing levels by certain indefinite price escalator clauses, linked to distillate fuel oil. According to a review of this study by the Chemical Manufacturers Association, the results are wrong and comparable to the Citizen/Labor Energy Coalition and Energy Action. Assuming that 60 percent of gas under phased decontrol rises to 110 percent of distillate fuel oil bringing average prices well above market clearing, disregards the fact that both interstate and intrastate purchasers have been able to introduce special features in many producer contracts which will reduce the potential impact of indefinite pricing provisions.

Also ignored is the fact that producers, have no interest in pricing natural gas above competing fuels which would result in shut-in production. Under phased decontrol, producers would be induced to renegotiate those contracts that resulted in prices above the market clearing price, thereby reducing any fly-up rather than expanding it.

The Benefits of Phased Decontrol. The case against continued regulation of natural gas prices at the wellhead is most convincing. Up front, we should face the consequence that deregulation will tend to move gas prices at the wellhead to the market clearing level, that is in the view of many economic experts, towards the price of residual fuel oil at the point of consumption, less the cost of transporting and distributing gas to market. However, benefits both directly and indirectly are numerous. Directly, the American gas consumer will benefit from:

- increased gas reserves through increased exploration,
- increased gas deliverability through economic development of already proved reserves and continued production from marginal properties,
- uniform, market-dictated pricing and resource allocation, free of government-induced artificialities and distortions,
- long-term lower gas prices than can be expected

if fuel and feedstock needs are supplied by foreign oil.

In common with all members of U.S. society, the gas consumer will share in these indirect benefits:

- Lessened dependence on imported oil; as domestic gas exploration and production increase, many analysts believe that the amount of oil we import will be reduced by at least a few hundred thousand barrels per day to over a million barrels per day,
- Lowered foreign payment deficits as we use domestic energy, in lieu of purchased foreign energy,
- Greater certainty of price and supply to provide a rational basis for advance planning,
- Efficient allocation of capital and manpower to develop and produce the nation's gas resources,
- Conservation opportunities dictated by correct price signals,
- Rational development of all U.S. energy potentials, based on market-dictated price relationships between gas, oil, coal, solar and other resources.

Actually, Congress recognized these benefits in passing the Natural Gas Policy Act of 1978 which, in spite of its serious defects, represents a turning away from the concept of federally-mandated producer prices, at least for certain categories of natural gas. We believe that this is the appropriate time to carry the philosophy which led to enactment of the NGPA to its logical conclusion, and to provide for a new and more effective approach to the phased deregulation of all natural gas prices by January 1, 1985. We join many experts both inside and outside of the energy industry in advocating this step, and are heartened by the support received from industrial users, distinguished economists, and the media, including the New York Times, The Wall Street Journal and the Washington Post.

Alternatives. In light of the evolving consensus that the NGPA's approach to partial deregulation contains serious flaws, and that a phased deregulation of all natural gas is a wiser and more economically efficient solution to our natural gas supply problems, we are, of course, somewhat discouraged by the President's recent statement that a crowded legislative agenda does not permit the administration to pursue changes in the NGPA this year. Nevertheless, we are gratified by the President's strong statement of continued support of phased deregulation as a part of a national energy policy geared to maximum production of our natural resources at the least cost to consumers.

Postponement of Congressional action on this issue until 1983 gives us additional time to investigate the workings of the current Act and to provide even further documentation of what we know to be the strong case for the changes we advocate. And, of course, we welcome Chairman McClure's announcement that this Committee will be pursuing a thorough and on-going series of hearings into all aspects of natural gas policy. We fervently hope that this process will culminate in early consideration of a natural gas deregulation bill in the next Congress. Having said that much, however, it would be unwise not to caution against any piecemeal legislative initiatives on natural gas-related issues in the meantime. A few legislative proposals have been either introduced or rumored, among them attempts to deal with certain contractual provisions which could not be fairly and fully considered in a vacuum. These ancillary matters must be addressed in the context of and in conjunction with our entire natural gas pricing policy, allowing the Congress to place each individual component within the mosaic of our total gas policy. Of course, pending such action it is quite appropriate to consider these matters in Congressional hearings, such as those which this Committee has now begun.

Congressional consideration of the natural gas policy issue was significantly advanced recently by the introduction of Senator Johnston's bill, S.2074. This legislation represents a major step forward by presenting a consensus approach to natural gas policy which unites producers, transporters and consumers. It joins the latest product of Congressman Gramm's efforts on the House side, H.R.5866, as a worthy focus of attention by those considering the future course of our natural gas policy.

We congratulate Senator Johnston and Congressman Gramm for their continuing contribution to the effort to rationalize America's natural gas pricing policy.

We should not conclude today's testimony without commenting upon FERC's exercise of certain authorities granted it by the Natural Gas Policy Act. As you know, FERC has proposed incentive prices for "near deep" gas discovered between 10,000 and 15,000 feet beneath the surface, and for gas discovered at depths of more than 300 feet offshore. The proposed "near deep" rule will be the subject of consideration at an April 6th Commission hearing, and the "deep water" rule is in the late stages of the "notational voting" procedure, and should become final in the near future. The Natural Gas Supply Association supports the Commission in this exercise of the authority delegated to it by Section 107(b) and (c) (5) of the Natural Gas Policy Act which allow FERC to set incentive prices for high-cost gas when evidence supports a finding that higher prices are necessary to elicit new supplies from certain formation, areas or categories of gas which involve higher costs and greater risks.

We also understand that FERC is considering exercising its authority to review rates for old interstate gas, although no rulemaking on this subject has yet been issued. FERC's authority to review these rates is clearly and unequivocally set forth in Sections 104(b)(2) and 106(c) and 109(b)(2) of the Natural Gas Policy Act, which authorize the Commission to adjust Section 104, 106 and 109 prices so long as the increased price is "just and reasonable within the meaning of the Natural Gas Act." Basically, the NGPA set prices for already-flowing interstate gas at the April 1977 rate, adjusted for inflation, but gave the Commission express authority to review these rates and to adjust them, if the rate would be just and reasonable under the Natural Gas Act.

Unfortunately, non-binding sense of the Congressional resolutions introduced in the House and Senate make the careless allegation that FERC is attempting a "backdoor decontrol" of natural gas prices through a review of old gas rates. S.Res.331, recently introduced by Senator Chafee, incorporates this charge which, as we have shown, is both misdirected and contrary to fact. FERC has announced no such action regarding old gas rates. It lacks authority to deregulate any natural gas prices, for whatever reason. What the NGPA authorizes the Commission to do is adjust the sections 104,106 and 109 prices to reflect current conditions, just as it would have done if the NGPA has not been enacted. We are forced to the sad conclusion that these resolutions are meant to confuse rather than assist Congress and the public in addressing a crucial policy issue.

If FERC does institute a review of these rates a forty-year history of Commission precedent and court decision will guide its actions. Chairman John Dingell of the House Energy and Commerce Committee, the House floor manager for the NGPA, recently agreed that FERC has clear authority to take this action. We agree, and support any decision by the Commission to exercise this authority and to adjust these rates in compliance with the requirements of the Administrative Procedures Act, the Natural Gas Act, and the Natural Gas Policy Act.

In closing, I want to thank the Committee for the opportunity to present this testimony. The case for natural gas decontrol is more compelling each time we appear. We are prepared to offer our full cooperation as you consider this issue.

APPENDIX I

Gas Cushion at a Glance

Selected Intrastate Pipelines

Pipeline Companies	Purchased Gas Cost * 3d Q. 1981 ($/Mcf)	Primary Area of Service	Major Industrial Purchasers
Louisiana Intrastate Gas	3.43	Louisiana	Chemicals
Houston Pipeline Co.	3.17	Texas	Chemicals
Monterey	2.58	Louisiana	Petroleum, Chemicals
Sugar Bowl	3.92	Louisiana	Chemicals
United Texas Trans.	3.38	Texas	Petroleum Chemicals
Lone Star	2.68	Texas	Glass, Chemicals

Selected Interstate Pipelines

Pipeline Companies	Purchased Gas Cost * 3d Q. 1981 ($/Mcf)	Primary Area of Service	Major Industrial Purchasers
Southern Gas Pipeline	2.75	Southeast	Glass, Chemical, Paper
United Gas Pipeline	2.48	Gulf Coast	Chemicals, Metals
Transcontinental Gas Pipeline	2.87	Eastern Seaboard	Chemicals, Glass, Paper
Mississippi River Transmission	3.40	South Central	Chemicals, Food
Columbia Gas Transmission	2.80	Mideast Northeast	Metals, Glass
El Paso	2.38	Southwest Pacific Coast	Metals, Petroleum, Glass
Texas Eastern	2.34	Mideast Northeast	Metals, Chemicals
Natural Gas P/LA	2.07	Midwest	Metals, Chemicals
Tennessee Gas Transmission Co.	2.22	Mideast	Metals, Chemicals
Cities Service	2.28	Midwest	Petroleum, Food, Chemicals

*includes field and pipeline purchases.

Sentor NICKLES. Thank you, Mr. Wright. Mr. Conklin?

STATEMENT OF DANNY H. CONKLIN, CHAIRMAN, NATURAL GAS COMMITTEE, INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

Mr. CONKLIN. Thank you, Mr. Chairman. My name is Danny Conklin. I am a partner in the Philcon Development Co., a small company located in Amarillo, Tex., engaged in primarily finding and producing natural gas. I am here today in my capacity as chairman of the Natural Gas Committee of the Independent Petroleum Association of America.

IPAA is the national association of nearly 8,000 independent explorer-producers of domestic crude oil and natural gas. We appreciate this opportunity to be heard today, and at the outset, we want to express to you our disappointment in the fact that the President and the Congress have decided not to move forth at this time to correct the many flaws of Federal legislation covering the production, transportation, and distribution of natural gas. No other commodity in our economy is subjected to the counterproductive controls that we find today covering natural gas.

In all other areas of our economy, including most recently most forms of transportation, we have opted for market forces rather than federally mandated controls. Rarely does a week go by that one doesn't read a major story about successes of decontrol in the trucking industry, the broadcast industry, or the airline industry. Most recently we have seen how well decontrol is working in another area of the petroleum industry, crude oil decontrol, which was finally reached in January 1981. In our statement we have a chart that proves that decontrol does work. It is after page 2. It outlines that the total imports are declining, that the gasoline, retail gasoline prices are starting down, and that the rig activity is still on an incline. Independents believe that given a chance, natural gas production can finish the task of backing out foreign imports of crude oil and crude oil products, but there are very many ifs involved in accomplishing this task.

One of the ifs, of course, is price. Will natural gas prices be allowed to move freely in the highly competitive marketplace for competing fuels? On page 4 of our testimony you will find that in the 1980 U.S. gas consumption figures, that residential had 25 percent, commercial 15 percent, industrial 40 percent, and electric utilities 20 percent. After page 5 we have two charts that indicate the competition for the residential energy, for their heating and cooking. As you can see, that electricity, fuel oil, and propane, and wood is 5 percent. The natural gas has 53 percent, so the residential consumer, there is competition in that area with the natural gas.

The second chart indicates what the prices are of all of these commodities, and there you can see what electricity is, and motor gasoline, No. 2 fuel oil, and natural gas, and see how natural gas is lagging.

We also have a chart after page 6, two charts in fact, that is entitled, "U.S. Wellhead Gas and Oil Prices." Again let me point out the difference between the oil and natural gas prices on this chart, and then the gas and oil well completions through 1981.

I also want to highlight that, the gas and oil completion chart, and bring your attention to the difference between the oil well completions and the gas well completions.

Senator JOHNSTON. Is that in feet or numbers?

Mr. CONKLIN. That is in numbers.

Senator TSONGAS. Mr. Chairman, on that chart on wellhead gas and oil prices, the impetus for the increase in oil prices was OPEC I take it?

Mr. CONKLIN. The impetus is—pardon, Senator?

Senator TSONGAS. The impetus in the increase in oil prices under your chart which I assume would be around 1979 was a function of OPEC's increase?

Mr. CONKLIN. The oil price.

Senator TSONGAS. Is that right?

Mr. CONKLIN. I think it is entitled "U.S. wellhead," Senator.

Senator FORD. Still, OPEC set the price.

Senator TSONGAS. If you decontrol the world price.

Mr. CONKLIN. Decontrol is working, yes. Prices are going down to the consumers.

Senator NICKLES. If the Senator wouldn't mind, let's try and work our way through the panel and keep within the 5-minute limit, and we have three more panels. Summarize if you could.

Mr. CONKLIN. We will do it that way. Thank you. The second if is, of course, end use prices. The same philosophy behind the price argument on behalf of home owners found its way into legislation in the 1970's in the form of end use restrictions for natural gas. These end use restrictions were placed in natural gas due to the absolutely fallacious assumption of 1978 that we were just about out of natural gas and we had to somehow save it for a selected group of residential and small commercial consumers, so that in essence what we are saying is when you look back at the chart in regard to 1980 consumption, that boiler fuel, and all we need to have, those markets, because unless these market restrictions are repealed, the day will come when gas producers will have a seasonal market where some of us might be sitting around patting our foot just a scoch, and making it a part-time business, and I don't think that you want us to be in a part-time business.

Then we come to the next, which is, of course, taxes. It is time for Congress and the Nation to decide whether or not we have a domestic petroleum industry for the purpose of producing energy or for the purpose of filling the Government treasury. If the natural gas producing industry is to reach its full potential in any move to decontrol, then we must go about and have a proper energy policy, so these are the issues that we think must be developed.

Will market prices for natural gas best serve this Nation? We believe the answer is yes. Are end use controls for natural gas needed and desirable? We say no. Does Government need additional tax revenues more than American consumers need more domestically produced energy? We think the answer is no.

We want to commend Senator Johnston for his leadership in developing legislation in this area in the form of S. 2074 and on the House side, Congressman Phil Gramm in introducing H.R. 5866, and Congressman Jim Collins in introducing H.R. 4885 to accomplish many of these things we have just discussed.

We would like to caution everyone against the neglect of this issue. Just because the political decision has been made not to address this issue in 1982, we cannot fall into the trap of believing this issue has been resolved. Each month that passes until congressional action is taken, the problems we have outlined will worsen.

One way to avoid some of these price and production problems from getting more distorted than otherwise they will would be to encourage the Federal Energy Regulatory Commission to move within its congressional mandated authority to ease pricing distortions between categories of production.

Thank you.

[The prepared statement of Mr. Conklin follows:]

STATEMENT OF
INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

AND

AMERICAN ASSOCIATION OF PETROLEUM LANDMEN
ARKOMA BASIN INDEPENDENT GAS PRODUCERS ASSOCIATION
CALIFORNIA INDEPENDENT PRODUCERS ASSOCIATION
EASTERN KANSAS OIL AND GAS ASSOCIATION, INC.
ILLINOIS OIL AND GAS ASSOCIATION
INDEPENDENT OIL AND GAS ASSOCIATION OF WEST VIRGINIA
INDEPENDENT OIL PRODUCERS TRI-STATE, INC.
INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES
INDEPENDENT PETROLEUM ASSOCIATION OF NEW MEXICO
INDIANA OIL AND GAS ASSOCIATION
KANSAS INDEPENDENT OIL AND GAS ASSOCIATION
KENTUCKY OIL AND GAS ASSOCIATION
LIAISON COMMITTEE OF COOPERATING OIL AND GAS ASSOCIATIONS
LOUISIANA LANDOWNERS ASSOCIATION, INC.
LOUISIANA ASSOCIATION OF INDEPENDENT PRODUCERS AND ROYALTY OWNERS
MICHIGAN OIL AND GAS ASSOCIATION
NATIONAL STRIPPER WELL ASSOCIATION
NEW YORK STATE OIL PRODUCERS ASSOCIATION
NORTH TEXAS OIL AND GAS ASSOCIATION
OHIO OIL AND GAS ASSOCIATION
OKLAHOMA INDEPENDENT PETROLEUM ASSOCIATION
PANHANDLE PRODUCERS AND ROYALTY OWNERS ASSOCIATION
PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION
PENNSYLVANIA OIL AND GAS ASSOCIATION
PERMIAN BASIN PETROLEUM ASSOCIATION
ROYALTY OWNERS & INDEPENDENT OIL AND GAS PRODUCERS ASSOCIATION OF ARKANSAS
TENNESSEE OIL AND GAS ASSOCIATION
TEXAS INDEPENDENT PRODUCERS AND ROYALTY OWNERS ASSOCIATION
VIRGINIA OIL AND GAS ASSOCIATION
WEST CENTRAL TEXAS OIL AND GAS ASSOCIATION

BY

DANNY H. CONKLIN

BEFORE THE

SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

MARCH 23, 1982

Statement of Danny H. Conklin, Chairman
Natural Gas Committee
Independent Petroleum Association of America
Before the Senate Energy and Natural Resources Committee
March 23, 1982

Mr. Chairman:

My name is Danny Conklin. I am a partner in the Philcon Development Company, a small company located in Amarillo, Texas, engaged primarily in finding and producing natural gas. I am here today in my capacity as chairman of the Natural Gas Committee of the Independent Petroleum Association of America. IPAA is the national Association of nearly 8,000 independent explorer-producers of domestic crude oil and natural gas.

We appreciate this opportunity to be heard today on the general topic of the current status of the natural gas industry.

At the outset, we want to express to you our disappointment in the fact that the President and the Congress have decided not to move forth at this time to correct the many flaws of federal legislation covering the production, transportation and distribution of natural gas.

No other commodity in our economy is subjected to the counterproductive controls that we find today covering natural gas. In all other areas of our economy, including most recently most forms of transportation, we have opted for market forces rather than federally mandated controls.

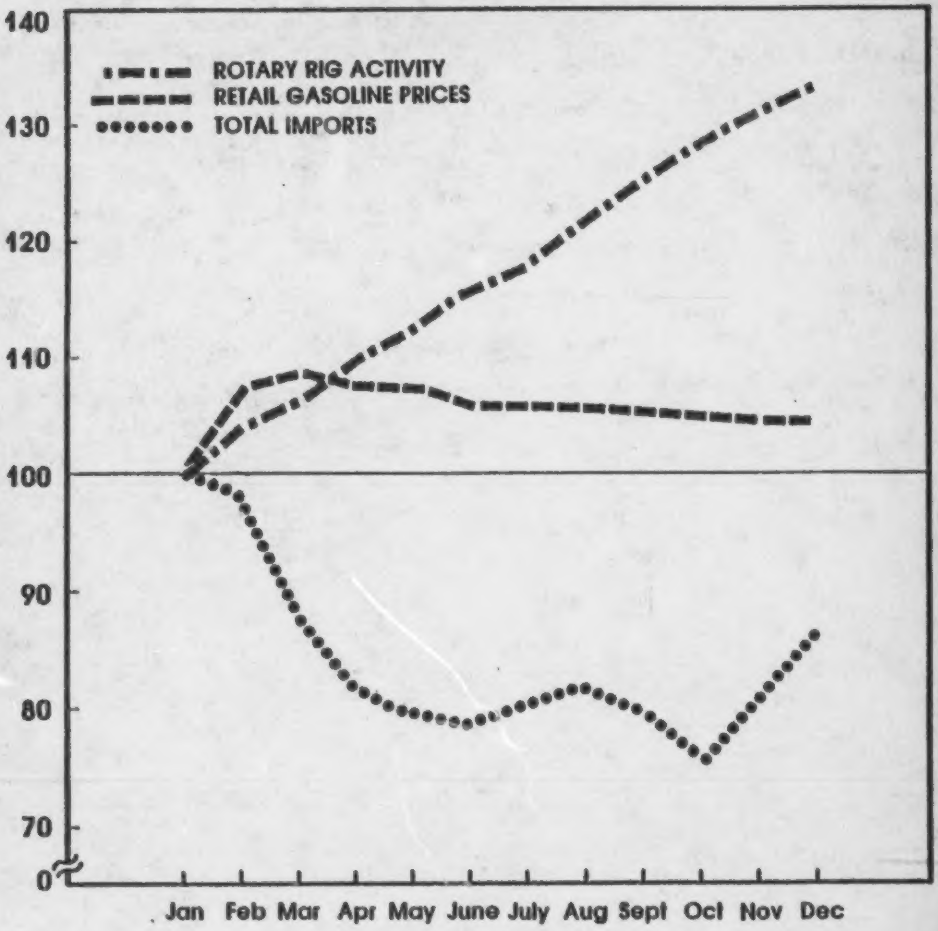
Rarely does a week go by that one doesn't read a major story about successes of decontrol in the trucking industry, the broadcast industry or the airline industry. Most recently, we have seen how well decontrol is working in another area of the petroleum industry — crude oil decontrol, which was finally achieved in January of 1981.

The following chart dramatically shows us what happened during 1981 as the result of crude oil decontrol. After nearly 10 years of steadily rising gasoline prices under price controls, we saw a sharp reversal in 1981 and retail prices still are falling. Stimulated by the prospect of a free market, drilling reached an all-time high in 1981 as more than 80,000 wells were drilled in the U.S. and for the first time since 1966 ~~1974~~ we saw a net increase in our proven crude oil reserves.

All this led to a decrease in our dependence on foreign imports, albeit, they still are too high both from an economic and from a national security standpoint.

EFFECTS OF CRUDE OIL DECONTROL

INDEX - JAN=100



Independents believe that given a chance, natural gas production can finish the task of "backing out" foreign imports of crude oil and crude oil products. But there are very many "ifs" involved in accomplishing the task. And most of those "ifs" involved what role government, both at the federal and state levels, plan to play in the future of the natural gas producing industry. Let me enumerate a few of the public policy decisions which need to be considered in the months and years ahead if natural gas -- the nation's premier energy source -- is to reach its full potential.

1. Prices: Will natural gas prices be allowed to move freely in the highly competitive market place for competing fuels? For too long -- since the 1954 Supreme Court decision which brought us wellhead price controls -- we have operated on the theory that natural gas, a clearly definable commodity, had to be subjected to public utility-type regulation. Such regulation has been extended to a number of areas of our economy over the years for those providing certain services i.e., telephones, electricity and until recently transportation. It was determined in the past that monopoly status be given to these utilities to avoid unnecessary duplicative systems. It seems to us that there is some logic to this. There is really no substitute for electricity for lighting your home or running your TV set. There too, is not much in the way of a substitute for the telephone if one wants instant, convenient and personal communication.

But natural gas has many substitutes. Electricity competes with it daily in the home for heating water, drying clothes and for cooking. Fuel oil and propane compete openly for space heating. American industry freely switches from one fuel to the other for firing industrial boilers. In fact, with the exceptions where natural gas is a feedstock or is used in a high technology finishing process, several fuel sources can and are substituted for natural gas.

It seems to us, that the public utility-monopoly philosophy as an argument for keeping price controls on the wellhead value of natural gas is invalid.

Thus we end up with the argument that we must have price controls to protect homeowners from higher fuel costs. Why have we singled out natural gas with this argument? Not that we're advocating it, but why not price controls on milk, meat, medical care and scores of other "necessities of life?" Because it would be wrong, is the answer!

The following table shows just who uses natural gas. It would appear that we are keeping 100 percent of our natural gas under controls for the "assumed" benefit of the users of only one-fourth of it.

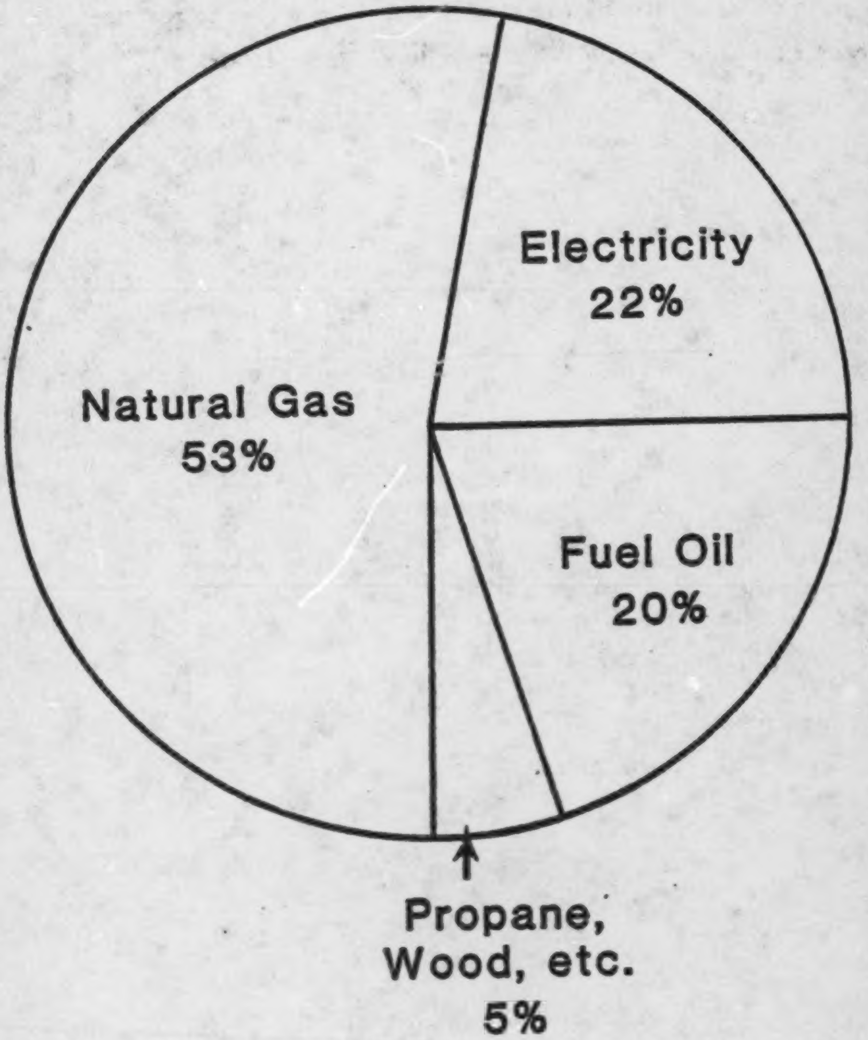
1980 U. S. Gas Consumption

	Quadrillion BTU's	%
Residential	5	25
Commercial	3	15
Industrial	8	40
Electric Utilities	4	20
Total	20	100

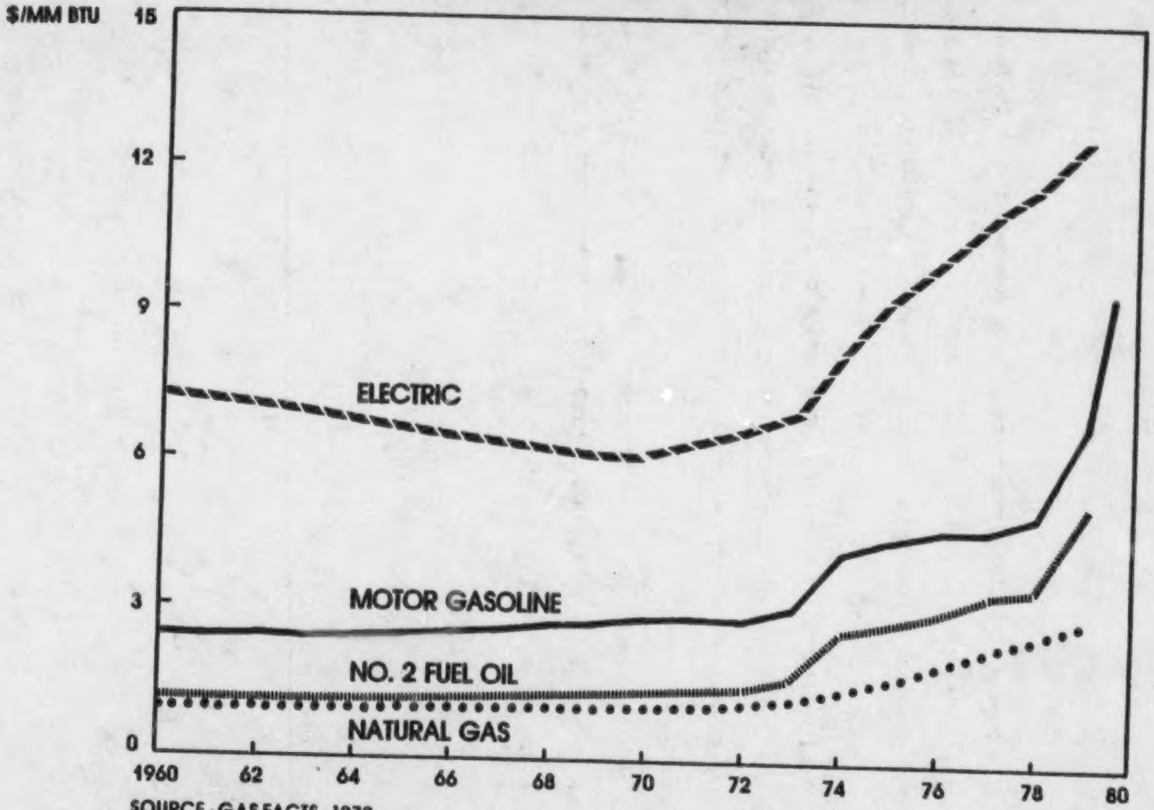
But beyond that, and it comes as a surprise to many, only slightly more than half of America's homes use natural gas. Most rural areas of the country are not served by natural gas distribution systems. New England has very little gas service. Most apartment buildings in the larger, older cities of the nation are heated by fuel oil. Millions of homes in the warmer parts of our country require only occasional, supplemental heat - usually electricity largely produced from hydro, nuclear, coal and oil -- all free of price controls.

The following two charts should tell us each a story. If you, as Members of Congress, have been voting to keep natural gas cheap, are you sure that is in the best interest of your constituents? Are you sure that a majority of your voters are not already paying market clearing prices to heat their homes? We hear a lot about "what's fair" these days. Is this fair?

Source of Residential Energy for Heating and Cooking



CONSUMER FUEL PRICES



SOURCE - GAS FACTS - 1979
IPAA

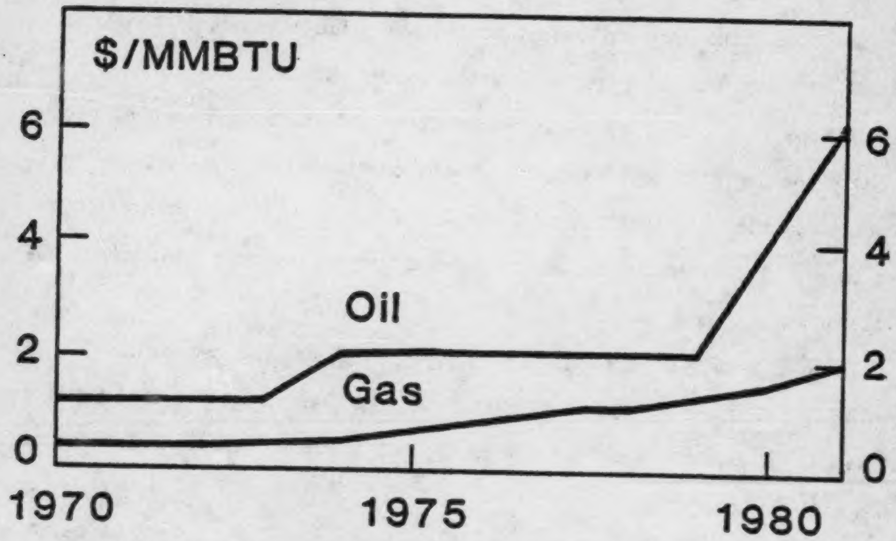
IPAA - 1981

We showed you earlier a chart dramatizing the benefits of crude oil decontrol during 1981 — that decontrol brought on more oilwell drilling activity resulting in declining consumer prices. The following two charts tell the real story of what is happening to "free" oil and "controlled" gas.

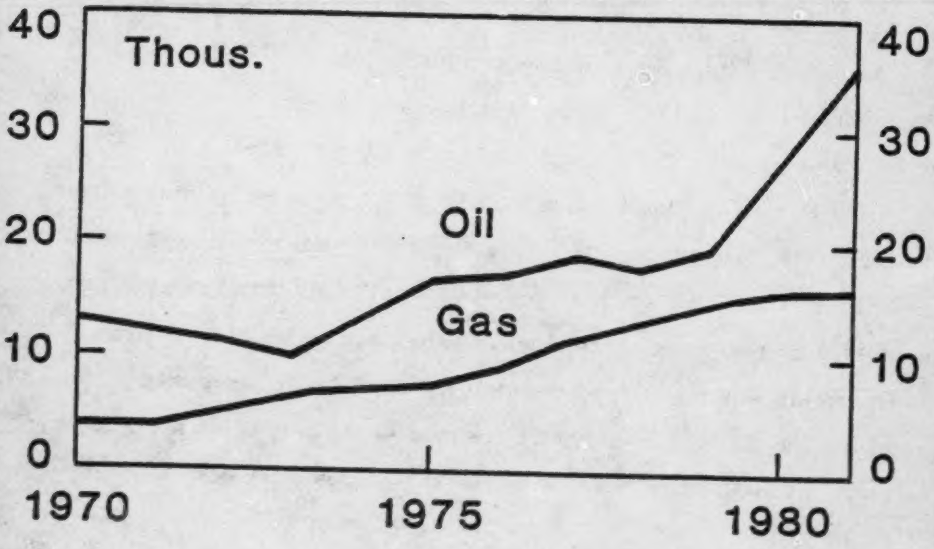
The first chart shows how the market price of oil has moved up to three times the Btu equivalent price of natural gas due to two separate actions of the same federal government — decontrol on the one hand and rigid controls on the other.

The second chart, an almost identical parallel to the first, shows the effect that price has on new wells completed. Crude oil wells go up — natural gas wells lag. The market works!

U.S. Wellhead Gas & Oil Prices (1981$)



Gas & Oil Well Completions



2. Uses: The same philosophy behind the price argument in behalf of homeowners found its way into legislation in the 1970's in the form of end-use restrictions for natural gas. Certain utility and industrial uses of natural gas have been or will be banned outright by provisions of the Fuel Use Act. Incremental pricing provisions of Title II of the Natural Gas Policy Act can lead to a de facto ban on the use of natural gas by industrial customers due to distorted economic factors.

These end-use restrictions were placed on natural gas due to the absolutely false assumption of 1978 that we were just about out of natural gas and we had to somehow save it for a "selected" group of residential and small commercial customers.

Unless these market restrictions are repealed, the day will come when gas producers will see their markets dominated by strictly seasonal customers. Faced with the prospect of more and more seasonally shut in production, gas producers will simply turn to other pursuits. There is enough risk involved in the gas business to start with for it to become a part-time business.

We believe this to be a serious problem, which often is ignored. Frequently, we act as if it doesn't really make that much difference how many of us are involved in the production of crude oil and natural gas.

According to the American Association of Petroleum Geologists, between 1969 and 1978, "significant discoveries" of new supplies of natural gas amounted to 41,304 billion cubic feet. Of that, 16,637 billion cubic feet were found by the 16 largest energy companies, but 24,667 billion cubic feet — 60 percent — were found by the rest of us. So while bad energy policy might not put the "big boys" out of business — the rest of us are a different matter. And without the "rest of us" we'll have gas shortages.

While we are on the subject of "the rest of us" let me share some other interesting statistics. According to figures developed by Petroleum Information, Inc., there is a direct correlation between the number of "producers of record" and the number of wells drilled. Following the disastrous 1950's and 1960's, in 1974 we had a total of 4,793 producers in the U. S. who completed 32,900 total wells in that year. By 1978, producer numbers had climbed to 7,112 and well completions reached 49,500. In 1981, a record 10,665 producers completed a record 80,500 wells. In each of these years, that worked out to an average of about 7 wells per producer.

So not only is capital important, but the collective genius of numbers of producers is vital and anything we do to drive people out of the business will end up costing us in lost production.

Small producers, the people I represent here today, are more vital today than ever before.

3. Taxes: It is time for Congress and the nation to decide whether or not we have a domestic petroleum industry for the purpose of producing energy or for the purpose of filling the public treasuries. There has been much rhetoric in recent months about "how producers had better be prepared to accept a stiff tax in conjunction with decontrol." Frankly, Mr. Chairman, that logic baffles us. We didn't hear of any taxes being linked to the decontrol of the airlines. Or the railroads. Or the trucking industry. We see the banks are now asking for greater market freedom and it appears that may be in the making. But no one is suggesting that a tax be tied to that decontrol — and let me make the record clear — we don't believe such a tax would be proper.

If energy is so essential to the day-to-day lives of Americans, why do we make it ever more costly to them through the imposition of all sorts of taxes? Nearly every state in the Union today is at one stage or the other of imposing higher energy taxes -- whether it's a higher severance tax in Michigan or a 3 percent wholesale tax on gasoline in Virginia -- it equates into higher energy prices to consumers. But instead of consumer dollars going to producers to develop abundant, secure supplies of domestic energy which consumers want and need, their money is siphoned off to provide more big government which they repeatedly have said they don't want.

If the natural gas producing industry is to reach its full potential in any move to decontrol, then counterproductive tax policy must be avoided or homeowners will end up with higher bills, less energy and more government.

So there are the issues that must be developed over the coming months if Congress hopes to come up with a sound energy policy.

Will market prices for natural gas best serve this nation? We believe the answer is yes.

Are end-use controls for natural gas needed and desirable? We say no.

Does government need additional tax revenues more than American consumers need more domestically produced energy? We think the answer is no.

Unfortunately, the public usually does not get a chance to answer these questions. Consumer groups and many politicians ask them if they want higher heating bills, and of course they say "no." Ironically, implicit in that question is that consumer groups and politicians can keep heating bills from going up if supply and demand factors dictate otherwise.

We must all quit trying to find scapegoats and easy answers and must join together -- politicians, producers and gas users -- in getting the facts across to the electorate as a whole. Given these full facts, we believe they will support the sound legislative changes we all know are needed.

Such legislation, whenever considered, needs to be comprehensive. Not only do price problems of producers need to be addressed on all categories of gas, but end-use controls and allocation schemes must be resolved. Equal access to natural gas supplies in the offshore domain needs to be extended in some meaningful way to intrastate pipelines and their customers.

To this end, we want to commend Senator Johnston for his leadership in developing such legislation in the form of S. 2074. On the House side, Congressman Phil Gramm has introduced H.R. 5866 and Congressman Jim Collins has introduced H.R. 4885, to accomplish much the same thing. All three of these bills are supported by a broad based coalition of producers, pipelines and users and they merit your consideration.

In conclusion, we would like to caution everyone against lethargy and benign neglect of this issue. Just because the political decision has been made not to address this issue in 1982, we cannot fall into the trap of believing this issue has been resolved. Each month that passes until Congressional action is taken, the problems we have outlined will worsen. One way to avoid some of these price and production problems from getting more distorted than they otherwise will, would be to encourage the Federal Energy Regulatory Commission to move within its Congressionally mandated authorities to ease pricing distortions between categories of production. This problem will not be solved until Congress acts, but the FERC should not be discouraged from doing what it can until that time.

In line with this, we urge this Committee not to get caught up in the populist rhetoric of the day and ask you to reject any moves to legislatively or politically prevent the FERC from doing what you have said it should do.

We appreciate this opportunity to be heard and stand ready to help you and others to finally resolve this vital public policy question.

Thank you.

Senator NICKLES. Thank you, Mr. Conklin. We appreciate your comments.

Henry Taliaferro, welcome.

STATEMENT OF HENRY B. TALIAFERRO, JR., EXECUTIVE VICE PRESIDENT, GHK COS., ON BEHALF OF THE INDEPENDENT GAS PRODUCERS COMMITTEE

Mr. TALIAFERRO. Mr. Chairman, thank you. My name is Henry Taliaferro. I am executive vice president of the GHK Cos. with headquarters in Oklahoma City. I am speaking on behalf of a group of 22 independent companies in the Independent Gas Producers Committee. All of those companies engage actively in the exploration and development of new gas reserves in tight formations and in deep and intermediate horizons where the vast bulk of new supplies are to be found.

I am here I suppose to suggest and to recommend to all of you gentlemen that policy with respect to natural gas be considered by all of you in the context of abundance of supply, not in the context of shortage in which gas legislation over the period of that 30-year war, and the Senator will acknowledge that I am old enough to remember most of those years, considered that policy.

There is a vast abundance of methane in the United States, and indeed around the world, an abundance adequate to carry the industrial societies of this planet well into the next century, and our policy considerations it seems to me should be based primarily on the understanding of that fact and its implications, the most important implication ultimately being on the moderation of prices which abundant, clean-burning energy makes possible.

I actively participated in the 2 years of debate that brought about the Natural Gas Policy Act, a compromise which has worked remarkably well. The compromise devoted itself to providing a means to test whether or not the prophets of abundance of gas supply were right or wrong, and to provide a mechanism by which venture capital could flow to the exploration and the development of those abundant supplies where they exist, and that is essentially below 10,000 feet, and not in association with the search for oil, and from the passage of that act, an independent company dominated business has arisen. It is the methane business, gentlemen, the methane business, and rapidly in only a short period of time we have established that our prophesies of abundance were in fact true.

We were able to establish that without charging the consumers the full cost of the exploratory effort necessary to establish those reserves because of the averaging mechanism in the Natural Gas Policy Act. The old flowing gas formed largely in association with the crude oil by oil companies which now own it made it possible for incentives to be provided, venture capitalists to find and establish reliability and deliverability long into the future of vast reserves of natural gas found not in association with crude oil because they are found below 10,000 feet where crude oil does not ordinarily exist.

I am here to plead with you. Let this act serve its interim adjusting purpose. Those old reserves are rapidly declining. The new reserves that represent abundance of new natural gas are coming rapidly into deliverability. Our industrial executives, our utility executives, will shortly, as bad an experience as they had with curtailment, be able to rely on that, and the price is going to moderate not at some theoretical market clearing level of an equivalent of crude or its products, but at what abundance can provide at the burner tip.

In the meantime, as we establish for all to see and read and believe and burn the abundance of this methane base, a price averaging mechanism is available to this industrial society by which the consumers do not bear the full cost of that surge.

May I ask that my full statement and the summary be included in the record of the hearings?

[The prepared statements of Mr. Taliaferro follow:]

BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES

UNITED STATES SENATE

Second Session, 97th Congress

SUMMARY OF
STATEMENT OF HENRY B. TALIAFERRO, JR.

Representing

THE INDEPENDENT GAS PRODUCERS COMMITTEE

March 23, 1982

Introduction

Mr. Chairman, my name is Henry B. Taliaferro, Jr. I am Executive Vice President of the GHK Companies of Oklahoma City, Oklahoma. I am appearing today on behalf of the Independent Gas Producers Committee (IGPC), composed of 23 natural gas exploration companies, including GHK. What unites us is not whether we drill for deep or shallow gas. We drill for both. We are united by the fact that we are aggressively exploring for new supplies, not only in Oklahoma, but in Texas, Louisiana and Kansas as well. I have appended at the conclusion of my remarks a complete list of IGPC members. 1/

The IGPC participated in, and we remember vividly, the legislative battle that preceded enactment of the Natural Gas Policy Act. At that time, we were one of a few voices arguing that our country possesses an enormous abundance of natural gas. The dominant view then was that gas had had it, that its use should be severely restricted, and that it was too rare to be burned as an industrial fuel. Official agency experts argued that production would continue to fall irrespective of pricing policy because there were practically no new supplies of gas remaining to be found.

A profound change in attitudes has taken place in the few short years since those gloomy predictions were made. Today, the pessimism centers not on gas, but on oil. No longer do experts predict major new petroleum finds in the continental United States. But there is now a widespread and growing optimism about gas, based on concrete evidence that plentiful undiscovered supplies still exist in the United States and worldwide. As the 1980's begin, we are leaving the era of oil, and entering the era of natural gas -- of methane.

The Abundance of Natural Gas

Despite growing optimism, few experts not actively drilling for natural gas even today appreciate its full potential to satisfy America's need for plentiful clean burning supplies of domestically produced fuel.

1/ See Appendix A.

For this reason, the IGPC welcomes this opportunity to tell you what we know to be the truth as we see it each day in the field.

We see the geometric rise in investment dollars funding drilling programs, the results of which may not appear in official statistics until two or three years after those dollars are spent.

We see the extraordinary success rates for wildcats now able to penetrate sediments that were never before economic to explore -- three out of five in the Deep Anadarko. And in the Appalachian, Michigan, Western Overthrust, Williston, South Louisiana and Permian Basins, substantial reserves are now being found, with from half to nearly seventy percent of remaining supplies being estimated to be deep. 2/ And, this tremendous potential has been demonstrated with less than three percent of the deep sediments thus far explored.

We see the turn-around in finding rates after a decade of decline. Deeper wells are today generating reserves ten times the size of the traditional shallow reservoirs.

We see not only record deep, but record shallow drilling as well. Never before have incentives been greater for exploration at all horizons.

We see the dramatic improvement in new reserve additions -- is 1980 approaching replacement levels for the first time since 1968.

We see, Mr. Chairman, that the so-called natural gas "bubble" in no bubble at all. The natural gas market has been in surplus for three consecutive years, and Merrill Lynch has recently predicted that the surplus will grow from 1.5 to 2 trillion cubic feet this year. 3/

2/ Potential Gas Committee, Potential Supply of Natural Gas in the United States, Colorado School of Mines, May 1981.

3/ Securities Research Division, Merrill Lynch, Pierce, Fenner and Smith Inc., Natural Gas Industry Outlook, January 1982, Page 8.

And with abundant and reliable long-term deliverability, we see the potential for natural gas rapidly to displace petroleum liquids in virtually all industrial uses outside the transportation sector -- saving our nation tens of billions in oil import costs per year in this decade.

We submit, therefore, that natural gas policy must now be founded on the premise that we have an abundance, not a shortage, of natural gas in this country.

Impact of Old Gas Decontrol

Mr. Chairman, we can think of nothing more out of place on today's legislative agenda, and no single bill more destructive of America's paramount economic and energy policy goals and more harmful to the natural gas industry, than legislation to raise the price of old, flowing gas.

Notwithstanding the claims of some producer groups, the decontrol of old gas prices would greatly compound the two most serious challenges facing our industry: high interest rates and restricted markets. A sharp increase in consumer costs for gas would cause interest rates to rise, and at the same time cause demand to contract. Our country today needs greater industrial output, higher productivity with stable prices and lower interest rates. Old gas decontrol, would achieve the opposite results, with disasterous consequences for the natural gas industry, and for virtually every other industry and citizen in the United States.

You need not accept our word alone. Last November, the Department of Energy released a report which showed that in the next three years inflation would be higher, interest rates would be higher, unemployment would be higher and productivity and economic output would be lower under total decontrol than under current law.4/ Moreover, the study showed oil imports would be higher and natural gas production lower between now and 1995 if old gas prices were raised. In other words, our national economy would suffer, the recovery would be endangered and consumers would pay more for less gas.

4/ U.S. Department of Energy, A Study of Alternatives to the Natural Gas Policy Act of 1978, November 1981, DOE PE-0031.

Alleged Flaws in the NGPA

A host of theoretical arguments have been raised to justify a rapid increase in the price of old gas. Let me respond to these in order.

Price Spike

Even critics of the NGPA now concede that a 1985 price spike is unlikely to occur as a result of natural gas shortages or a low NGPA world oil price assumption. Gas prices have risen more rapidly than expected. The market is slack. In January of this year, Merrill Lynch published an excellent analysis of the potential for fly-up which states:

> "The gas industry, as well as politicians are concerned that a substantial price spike will occur in 1985 when gas is decontrolled under the NGPA. We disagree. At the end of 1984, based on an annual inflation rate of 8%, we estimate that the average price of gas will be $3.75 - $4.00 per MMBtu. Consequently, if the average wellhead price after decontrol is in line with our estimate of $4.00 - $4.25, a dramatic price spike will not occur.[5]

Contracts

Mr. Chairman, pipeline companies have expressed concern about the potential for a rapid run-up in 1985 gas prices caused by indefinite price escalator clauses. We know these fears are sincere, but we believe them to be misplaced. As a practical matter, producers have no alternative but to reach an agreement since our livelihood depends on selling gas. We cannot eat it; we cannot store it; we have borrowed heavily to find it; we must sell it at a marketable price.

Intrastate Market/Interstate Market

Nor has concrete evidence yet been produced of significant problems within either the intrastate market or interstate markets.

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[5] Securities and Research Division, Op. Cit., Page 3.

In fact, the only hard data assembled on comparative prices paid to purchase gas shows almost no differential in the relative ability of intrastate and interstate pipelines to bid for new supplies.

Allocation of Drilling Capital

But of all the arguments advanced to justify the decontrol of old gas prices, none is more misleading than the assertion that the NGPA is producing a misallocation of drilling capital. Mr. Chairman there can be only one meaningful definition of efficiency in the targeting of investment dollars for new exploration. Efficiency means drilling where the gas is. Overwhelmingly, America's remaining undiscovered supplies of natural gas are located in deep and near-deep sediments or in tight sands formations. Over seventy percent of the undiscovered supplies remaining to be found in the United States are to be found beneath 10,000 feet or in tight sands formations or in other categories designated for incentive pricing under the Natural Gas Policy Act.

Addressing the Problems of the Real World

Mr. Chairman, we believe it is time to put aside concerns about theoretical problems of market ordering--which have not been substantiated and cannot be substantiated because these problems do not exist--and turn to the problems of the real world, a world where natural gas is already plentiful and becoming more so each day.

We can eliminate in this decade all oil imports if we chose to do so. Gas can rapidly satisfy virtually all industrial needs without shortages and with certainty of reliable supplies to serve consumers well into the next century.

Recommendations

To achieve this potential, the natural gas -- the methane -- industry needs the wisdom and support of this Committee. Specifically, we urge you:

- To resist the severe economic disruption and loss of drilling incentives which would be caused by the decontrol of old, flowing gas;

- To call upon the Federal Energy Regulatory Commission to proceed rapidly to provide an adequate incentive price for near-deep exploration;
- To remove, as soon as practical, end use constraints including incremental pricing and provisions of the Fuel Use Act which arbitrarily restrict access to markets; and,
- To oppose enactment of new taxing proposals which could dramatically lower incentives for investment in exploration for natural gas and other domestically produced energy supplies.

Conclusion

Mr. Chairman, the tragedy today is that economic disputes over wellhead pricing policy, primarily between the major international energy companies in the oil business -- who own most of the old gas found with oil -- and independent producers who predominate in the development of new gas, are obscuring a fundamental truth: that our industry is on the verge of proving, indeed in our opinion has already proven, that we can discover and produce all of the natural gas you will permit us to sell.

Let us emerge from 1982 not with destructive changes in energy-related tax and wellhead pricing laws that are clearly working well. Instead let us emerge from these deliberations with a commitment to a national policy that aggressively promotes production and use of methane. Every region, every state, and virtually every industry in America stand to gain from such a policy.

Thank you, Mr. Chairman.

APPENDIX A

2/16/82

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STATEMENT OF HENRY B. TALIAFERRO, JR.

Representing

THE INDEPENDENT GAS PRODUCERS COMMITTEE

Introduction

Mr. Chairman, my name is Henry B. Taliaferro, Jr. I am Executive Vice President of the GHK Companies of Oklahoma City, Oklahoma. I am appearing today on behalf of the Independent Gas Producers Committee (IGPC), composed of 23 natural gas exploration companies, including GHK. What unites us is not whether we drill for deep or shallow gas. We drill for both. We are united by the fact that we are aggressively exploring for new supplies, not only in Oklahoma, but in Texas, Louisiana and Kansas as well. I have appended at the conclusion of my remarks a complete list of IGPC members. 1/

The IGPC participated in, and we remember vividly, the legislative battle that preceded enactment of the Natural Gas Policy Act. At that time, we were one of a few voices arguing that our country possesses an enormous abundance of natural gas. The dominant view then was that gas had had it, that its use should be severely restricted, and that it was too rare to be burned as an industrial fuel. Official agency experts argued that production would continue to fall irrespective of pricing policy because there were practically no new supplies of gas remaining to be found.

A profound change in attitudes has taken place in the few short years since those gloomy predictions were made. Today, the pessimism centers not on gas, but on oil. No longer do experts predict major new petroleum finds in the continental United States. But there is now a widespread and growing optimism about gas, based on concrete evidence that plentiful undiscovered supplies still exist in the United States and worldwide. As the 1980's begin, we are leaving the era of oil, and entering the era of natural gas -- of methane.

The Abundance of Natural Gas

Despite growing optimism, few experts not actively drilling for natural gas even today appreciate its full potential to satisfy America's need for plentiful clean burning supplies of domestically produced fuel.

1/ See Appendix A.

For this reason, the IGPC welcomes this opportunity to tell you what we know to be the truth as we see it each day in the field.

We see the geometric rise in investment dollars funding drilling programs, the results of which may not appear in official statistics until two or three years after those dollars are spent. Mr. Chairman, a number of IGPC member companies are active in the Deep Anadarko Basin. Data on 1981 Deep Anadarko well completions -- showing a doubling in completions in only one year -- is based on investments begun in 1979. Since then, investment in the Deep Anadarko has again nearly doubled, but the results of this effort will not begin to appear in the official data for at least another year.

We see the extraordinary success rates for wildcats now able to penetrate sediments that were never before economic to explore. Three out of five of our exploratory wells in the Deep Anadarko are successfully finding gas. Deep exploratory wells are uncovering reserves beyond the expectation of all but a few, not only in the Anadarko, but in the Appalachian, Michigan, Western Overthrust, Williston, South Louisiana and Permian Basins, as well. In most of these provinces, from half to nearly seventy percent of remaining supplies are now estimated to be deep. 2/ And, this tremendous potential has been demonstrated with less than three percent of the deep sediments thus far explored.

We see the turn-around in finding rates after a decade of decline. Deeper wells are today generating reserves ten times the size of the traditional shallow reservoirs. A fraction of the well completions in the past several years is today generating America's largest and most prolific new reserves.

We see not only record deep, but record shallow drilling as well. Never before have incentives been greater for exploration at all horizons.

We see the dramatic improvement in new reserve additions -- in 1980 approaching replacement levels for the first time since 1968.

2/ Potential Gas Committee, Potential Supply of Natural Gas in the United States, Colorado School of Mines, May 1981.

We see the substantial and increasing excess deliverability that already exists as a result of investments made two or three years ago. Mr. Chairman, the so-called natural gas "bubble" in no bubble at all; the natural gas market has been in surplus for three consecutive years, and Merrill Lynch predicts the surplus will grow from 1.5 to 2 trillion cubic feet this year. 3/

And with abundant and reliable long-term deliverability, we see the potential for natural gas rapidly to displace petroleum liquids in virtually all industrial uses outside the transportation sector -- saving our nation tens of billions in oil import costs per year in this decade.

Challenges Facing the Gas Industry

For our country to realize the full potential for natural gas, two immediate challenges must be overcome.

First, high interest costs must be reduced. As in all other sectors of our economy, independent exploration companies are suffering from the high cost of credit. Many of our member companies must borrow virtually every cent spent on new exploration. High interest rates increase drilling costs and thereby limit our ability to expand exploration efforts. Today, almost one out of every five dollars spent must pay not for drilling but for interest costs. We understand that the credit problem is complex and that it cannot be solved overnight; however, we urge you to resist adamantly proposals before you which would cause interest costs to rise.

Second, we need markets. In today's weak economy, with a large and growing surplus of natural gas, we cannot continue to raise investment capital for new drilling without assured access to markets. Incremental pricing and the gas restrictions contained in the Fuel Use Act are vestiges of a bygone era -- a time when policy makers feared supplies of gas would soon be gone. Natural gas is an ideal industrial fuel. Supplies of gas are much more plentiful than supplies of oil. Gas does not need to be imported --

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3/ Securities Research Division, Merrill Lynch, Pierce, Fenner and Smith Inc., Natural Gas Industry Outlook, January 1982, Page 8.

it is being found in quantities never before imagined in every region of the United States. A multi-billion dollar transportation system already exists to carry these supplies to users. And, gas is clean-burning and therefore can be used without massive new investment for pollution control equipment.

Impact of Old Gas Decontrol

Notwithstanding the claims of some producer groups, the decontrol of old gas prices would greatly compound the two most serious challenges facing our industry. A sharp increase in consumer costs for gas would cause interest rates to rise, and at the same time cause demand to contract. Our country today needs greater industrial output, higher productivity with stable prices and lower interest rates. Old gas decontrol would achieve the opposite results, with disasterous consequences for the natural gas industry, and for virtually every other industry and citizen in the United States.

You need not accept our word alone. Last November, the Department of Energy released a report entitled, A Study of Alternatives to the Natural Gas Policy Act of 1978. 4/ That report showed that inflation would be higher, interest rates would be higher, unemployment would be higher and productivity and economic output would be lower under total decontrol than under current law. Moreover, the study showed oil imports would be higher and natural gas production lower between now and 1995 if old gas prices were raised. In other words, our national economy would suffer, the recovery would be endangered and consumers would pay more for less gas.

Mr. Chairman, we can think of nothing more out of place on today's legislative agenda, and no single bill more destructive of America's paramount economic and energy policy goals, than legislation to raise the price of old, flowing gas.

Alleged Flaws in the NGPA

A host of theoretical arguments have been raised to justify a rapid increase in the price of old gas. First,

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4/ U.S. Department of Energy, A Study of Alternatives to the Natural Gas Policy Act of 1978, November 1981, DOE PE-0031.

this Committee has heard predictions that a so-called price spike or fly-up will occur when controls are removed from new gas in 1985. Second, you have been told that intrastate pipelines and consumers lacking access to supplies of Section 104 gas are being placed at a severe disadvantage in bidding for new gas supplies. Third, it is argued that some interstate pipelines will be unfairly favored over other interstate pipelines based on their relative access to old gas supplies. Finally, some claim that investment dollars are being misallocated under the incentive pricing structure of the NGPA.

Let me respond to these in order.

Price Spike

Even critics of the NGPA now concede that a 1985 price spike is unlikely to occur as a result of natural gas shortages or a low NGPA world oil price assumption. Gas prices have risen more rapidly than expected. The market is slack. In January of this year, Merrill Lynch published an excellent analysis of the potential for fly-up which states:

> "The gas industry, as well as politicians are concerned that a substantial price spike will occur in 1985 when gas is decontrolled under the NGPA. We disagree. At the end of 1984, based on an annual inflation rate of 8%, we estimate that the average price of gas will be \$3.75 - \$4.00 per MMBtu. Consequently, if the average wellhead price after decontrol is in line with our estimate of \$4.00 - \$4.25, a dramatic price spike will not occur. In fact, our estimates indicate that if the NGPA were to remain in effect beyond January 1, 1985, the average price of gas in that year would approximate \$4.00 - \$4.25 per Mcf, which is also our decontrolled price estimate." 5/

5/ Securities and Research Division, Op. Cit., Page 3.

Contracts

Mr. Chairman, pipeline companies have expressed concern about the potential for a rapid run-up in 1985 gas prices caused not by the NGPA, but by the potential for a relatively small number of contracts tied to oil prices to trigger indefinite price escalator clauses in a much larger number of contracts upon decontrol in 1985. We know these fears are sincere, but we believe them to be misplaced. Preliminary analysis by the Energy Information Administration reveals that at least some pipelines with oil price-related contracts will be shielded by "market-out" or other buyer protection clauses. 6/ For the very small number of oil-related contracts without such buyer protection provisions, relief can and will be obtained through the process of renegotiation.

Pipelines have substantial leverage in the renegotiation process. As a practical matter, producers have no alternative but to reach an agreement since our livelihood depends on selling gas. We cannot eat it; we cannot store it; we have borrowed heavily to find it; we must sell it at a marketable price.

Intrastate Market

Nor has concrete evidence been produced of significant problems within the intrastate market. You will recall that last November several witnesses warned this Committee of disruption already occuring in the intrastate market. Yet the hearing record reveals no evidence of actual problems. Based on that record, curtailments in Texas are much less common today than they were before the NGPA was passed. No factual evidence was submitted to support assertions that Louisiana intrastate pipelines are being placed at a competitive disadvantage compared with their interstate counterparts. In fact, the only hard data ever assembled shows almost no differential in the relative ability of intrastate and interstate pipelines to bid for new supplies. Prices paid by intrastate compared with interstate pipelines as of last spring varied by only

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6/ Energy Information Administration, U.S. Department of Energy, An Analysis of the Natural Gas Policy Act and Several Alternatives, Part I, December 1981.

sixteen cents per mcf. 7/ This differential becomes statistically insignificant when compared with much larger differences in relative transportation and distribution costs.

Interstate Market

Turning to the issue of equities among pipelines within the interstate system, the facts again fail to support the theories of those who contend the NGPA is fatally flawed. The Energy Information Administration recently prepared a report which cross references, for the first time, data on ownership of old gas reserves with data on prices paid for unregulated gas supplies. 8/ The data reveal the utter lack of substance to the allegation that pipelines with larger old gas reserves are bidding up the unregulated gas price and thereby undermining the ability of pipelines with smaller old gas reserves to compete for new supplies. The facts show the reverse to be the case. Pipelines with smaller reserves of old gas are paying a higher price for unregulated gas than pipelines with larger reserves of old gas. To the extent that disparities exist among pipelines, those disparities may be caused by the fact that some systems own larger total reserves -- including both old and new supplies -- than other systems. Deregulation of old, flowing gas would not solve this problem. Rather, it would compound the problem by slowing exploration for new supplies. Under total decontrol, prices paid by virtually all pipelines and users would be significantly higher than under current law.

Allocation of Drilling Capital

Mr. Chairman, of all the arguments advanced to justify the decontrol of old gas prices, none is more misleading than the assertion that the NGPA is producing a misallocation of drilling capital. A misallocation of

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7/ Energy Information Administration, U.S. Department of Energy, Intrastate and Interstate Supply Markets Under the Natural Gas Policy Act, May 1981, Page v.

8/ Energy Information Administration, U.S. Department of Energy, An Analysis of the Natural Gas Policy Act and Several Alternatives, Part I, December 1981, Page 66.

capital did occur. It took place before the NGPA was passed. Before 1978, throughout almost the entire history of the oil and gas industry, only about one percent of all drilling activity was directed toward sediments beneath 15,000 feet. Of the 99 percent of the wells which were completed above 15,000 feet, the vast majority were completed above 10,000 feet.

To a producer, there can be only one meaningful definition of efficiency in the targeting of investment dollars for new exploration. Efficiency means drilling where the gas is. Overwhelmingly, America's remaining undiscovered supplies of natural gas are located in deep and near-deep sediments or in tight sands formations. I have appended at the conclusion of my remarks two separate analyses of the U.S. natural gas resource base. 9/ One compiled by the GHK Companies and submitted to this Committee last fall shows that over seventy percent of the undiscovered supplies remaining to be found in the United States are to be found beneath 10,000 feet or in tight sands formations or in other categories designated for incentive pricing under the Natural Gas Policy Act. The second analysis, conducted by ICF, Incorporated, at the request of the Independent Gas Producers Committee, shows that, even if tight sands formations and unconventional supplies are excluded, nearly two-thirds of the natural gas remaining to be found is located in sediments beneath 10,000 feet.

In a perfect world, the IGPC would favor immediate deregulation of all newly discovered natural gas irrespective of depth. Such action would produce optimum incentives for drilling at all horizons. We do not ask you to act on such legislation now because we believe it unrealistic to expect the Congress to act on a wellhead pricing measure without provoking a long, bitter fight, culminating in much greater federal intervention in the natural gas industry than under the NGPA. If enacted, such legislation would certainly be acccompanied by an excise or windfall profits tax. Given this reality, the term "total deregulation" is misleading. Controls on new gas will be eliminated by 1985 under the NGPA. Controls on old gas will rapidly disappear as supplies are depleted. If a law were passed to raise old gas prices, our industry would immediately be subject to a more intrusive and permanent new

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9/ See Appendix B.

form of regulation through the tax code. But in contrast with the present system, which encourages new exploration and production, any decontrol plan coupled with a tax would lower incentives for discovery of new reserves.

Incentive Prices for Near-Deep Gas

Under Section 107 of the NGPA, the FERC already possesses administrative authority to provide incentive prices to develop supplies of gas which could not otherwise be produced because of extraordinary risks or costs. The conference report on the NGPA specifically cites near-deep as an example of the type of gas intended for special price treatment. The FERC is now considering a long overdue rulemaking to provide an incentive price for near-deep gas. Analysis conducted for the IGPC reveals that gas beneath 10,000 feet could easily qualify for an incentive price of 200% of the Section 102 price under either a commodity value or cost-related test. ICF predicts such an incentive price could by 1985 increase annual deliverability by almost one trillion cubic feet. 10/ The quickest and surest way to ensure maximum efficiency in the allocation of capital for exploration at all depths is prompt approval by the FERC of an adequate incentive price for near-deep supplies.

Addressing the Problems of the Real World

Mr. Chairman, it is time to put aside concerns about theoretical problems of market ordering which have not been substantiated and cannot be substantiated because these problems do not exist. It is time to turn to the problems of the real world -- a world where natural gas is already plentiful and becoming more so each day. It is time to stop making policy based on scarcity and start making policy based on the abundance of the natural gas resource base.

Prophets of doom in the gas industry often stress the point that oil well completions have recently exceeded gas well completions. I urge you to look at the facts that count. In 1981, oil production fell. Gas production rose. More wells were successfully completed to develop marginal supplies of oil already known to exist. But, even with oil prices at peak 1981 levels, more exploratory wells were

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10/ See comments of the Independent Gas Producers Committee before the Federal Energy Regulatory Commission. Docket No. RM 82-8. March 15, 1982.

drilled for gas than for oil. Venture capital is moving where the real potential lies, and that potential lies not in oil but in natural gas -- in methane.

Mr. Chairman, tens of billions of dollars are today being spent to import foreign oil at a time when producers are unable to sell much of the domestically produced natural gas now being found. We can eliminate in this decade all oil imports if we chose to do so. Gas can rapidly satisfy virtually all industrial needs without shortages and with certainty of reliable supplies to serve consumers well into the next century.

Recommendations

To achieve this potential, the natural gas -- the methane -- industry needs the wisdom and support of this Committee. Specifically, we urge you:

- To resist the severe economic disruption and loss of drilling incentives which would be caused by the decontrol of old, flowing gas;
- To call upon the Federal Energy Regulatory Commission to proceed rapidly to provide an adequate incentive price for near-deep exploration;
- To remove, as soon as practical, end use constraints including incremental pricing and provisions of the Fuel Use Act which arbitrarily restrict access to markets; and,
- To oppose enactment of new taxing proposals which could dramatically lower incentives for investment in exploration for natural gas and other domestically produced energy supplies.

Tax Policy

Mr. Chairman, there are three tax proposals which pose an enormous danger to the methane industry which must be addressed.

The first is a windfall profits tax on deregulated natural gas -- a tax which would greatly compound the disincentives which would be created by old gas decontrol, a tax which the Congressional Budget Office doubts would result in a significant net increase in federal revenues 11/, and a tax which would mean replacing a rapidly disappearing set of controls with a new and permanent form of federal intervention within the methane producing industry -- one that could affect new, as well as old, gas.

The second is a proposal for a new corporate and individual minimum tax which would jeopardize the exploration programs of independent producers and penalize investment in domestic exploration for energy, compared with other forms of investment. During the entire history of the Internal Revenue code until 1981, a positive tax incentive was maintained to explore for the single commodity required by every industry, consumer and small business in the United States -- fuel. In 1981, this advantage was neutralized through the adoption of much more generous depreciation provisions which did not benefit energy exploration companies. The Treasury Department has now proposed a minimum tax which would put independent oil and gas producers at a significant disadvantage by requiring that our intangible drilling cost and depletion deductions essentially be disregarded for purposes of calculating the minimum tax. In contrast, industries which benefitted from accelerated depreciation are not required to pay a minimum tax on the benefits they received last year. Ironically, the foreign tax credit is also excluded from the proposed minimum tax, yielding a disincentive to invest in domestic exploration compared with exploration abroad.

The third tax proposal, if enacted, would bring investment in natural gas exploration to a standstill by repealing entirely intangible drilling costs and depletion deductions. These provisions are essential to the ability of independent companies to raise capital required for exploration. If intangible drilling cost deductions were repealed, natural gas exploration in America by all but the largest and most profitable major international energy companies would cease.

Conclusion

Mr. Chairman, there is a great temptation in today's atmosphere to a place lower priority on the needs of

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11/ Congressional Budget Office, Reducing the Federal Deficit: Strategies and Options, February 1982, pages 197-199.

the energy industry. Oil prices are falling at the moment. Oil imports are far below the levels of the late 1970's. Some analysts today predict petroleum prices will remain relatively stable for at least the next several years. But consider the American experience during the last decade. Immediately after the 1973 embargo, consumption fell. Americans were alert to the economic and strategic risks of dependence on foreign oil. But with a few years of stable prices, oil consumption rose rapidly while domestic production continued to fall. As a result, our country was left vulnerable to the serious disruption which occurred after the fall of Iran's government. Our prosperity and our national security itself, we now realize, depend on our taking every reasonable step to end American dependence on foreign oil.

We must use our reserves of coal where practical without jeopardizing the environment. We must continue to search for new technologies, especially those which can help to make available renewable, clean burning energy at prices consumers can afford. And, we must aggressively develop remaining marginal domestic crude oil supplies. But, for the remainder of this century and well beyond, no other domestic source of fuel begins to compare with the abundance, versatility, environmental and economic advantages of methane.

The tragedy today is that economic disputes over wellhead pricing policy, primarily between the major international energy companies in the oil business -- who own most of the old gas found with oil -- and independent producers who predominate in the development of new gas, are obscuring a fundamental truth: that our industry is on the verge of proving, indeed in our opinion has already proven, that we can discover and produce all of the natural gas you will permit us to sell.

We understand that it takes time for official statistics to register what we producers are seeing each day in the field. But, we earnestly hope that the Congress and leaders in private industry will begin to look beyond theoretical arguments over secondary issues to the primary fact that is plain for all to see: the methane industry is the greatest success story in America today. We are investing more money, becoming more productive, drilling and successfully completing more wells than ever before in history.

This performance can be improved. And there are dangers we must avoid. Yet as these issues are explored, let us not become so preoccupied with minor matters, that we fail to see the central facts on which we can nearly all agree: that methane has an important and growing role in America's future both as an energy resource and as an economic asset, the magnitude of which almost everyone underestimated as recently as 1978. To ignore that resource, to overlook the enormous strides achieved in only a few short years to develop it, would be a monumental national mistake.

Let us emerge from 1982 not with destructive changes in energy-related tax and wellhead pricing laws that are clearly working well. Instead let us emerge from these deliberations with a commitment to a national policy that aggressively promotes production and use of methane. Every region, every state, and virtually every industry in America stand to gain from such a policy.

Thank you, Mr. Chairman.

APPENDIX A

2/16/82

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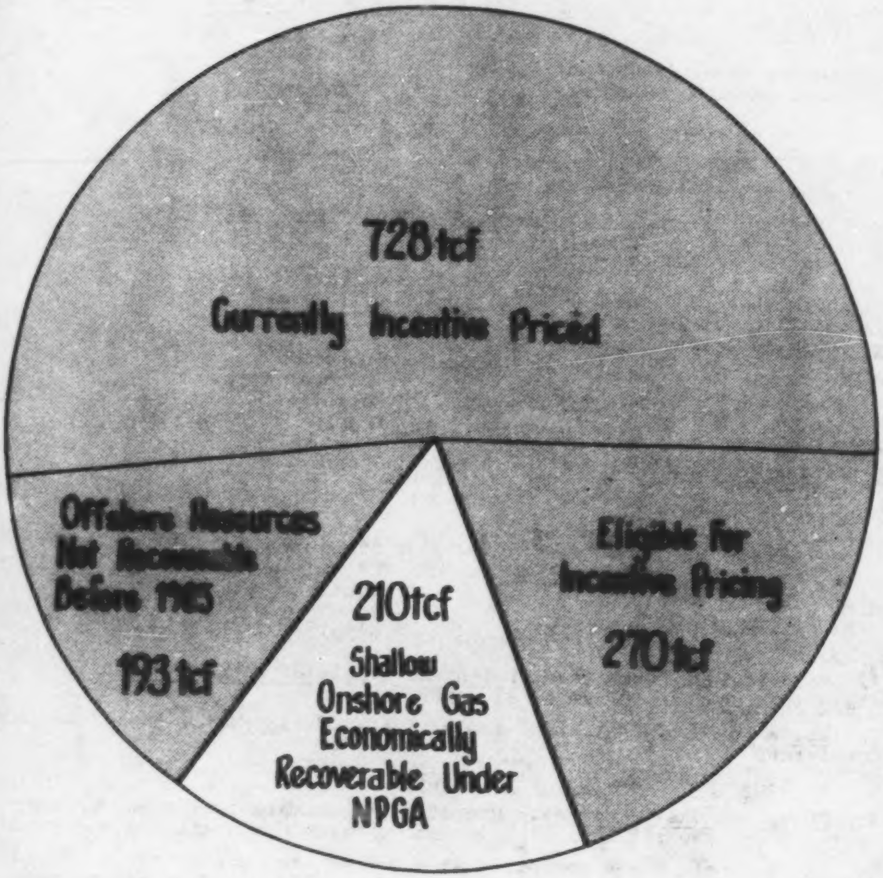
APPENDIX B

Potential Recoverable Natural Gas Supplies

Trillion Cubic Feet



LEGEND

Potential/Recoverable Natural Gas Supplies Which Are Already Incentive Priced

		(Trillion Cubic Feet)
Onshore beneath 15,000 feet[1]		240
Tight sand formations[2]		383
Coal seams[3]		45
Devonian shale[4]		60
	Subtotal	728
	Share of Total Potential Supply	52%

Potential Recoverable Natural Gas Supplies Which Can Be Incentive Priced Under NGPA

Onshore between 10,000 and 15,000[5]		211
Offshore beneath 200 meters[1]		59
	Subtotal	270
	Share of Total Potential Supply	19%

Potential Natural Gas Supplies Which Because of Permitting and Logistical Requirements Cannot Be Recovered Before January 1, 1985 Regardless of Price

Offshore above 200 meters[1] (Note: Also gas located beneath 200 meters listed above)		193
	Subtotal	193
	Share of Total Potential Supply	14%

Remaining Potential Natural Gas Which is Economically Recoverable Under NGPA

Onshore above 10,000 feet[5]		210
	Subtotal	210
	Percent of Total Potential Supply	15%

1/ Potential Gas Committee, Potential Supply of Natural Gas in the United States. December 31, 1980.

2/ Ibid. Mid-point high and low estimates presented by the Committee.

3/ National Petroleum Council (1980).

4/ Potential Gas Committee. Use of high estimate from range presented by the Committee reflects high incentive price now available under NGPA.

5/ GHK estimate based on Potential Gas Committee projection of the potential supply of gas located onshore above 15,000 feet and on recent drilling experience in major producing areas.

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METHODOLOGY FOR CALCULATING SUPPLY RESPONSE TO NEAR-DEEP INCENTIVE PRICING

ICF, Incorporated, an independent consulting firm in Washington, D.C., has made an estimate of the increased production of natural gas which will result from various degrees of incentive prices for the near-deep. This analysis constituted a revision and improvement over earlier work that ICF had done for the Department of Energy in 1981. The basic methodology was published in "Two Market Analyses of Natural Gas Decontrol" (U.S. Department of Energy, November, 1981).

The supply response is calculated in three steps: (1) estimating the increase in footage drilled in response to higher prices for near-deep gas; (2) the amount of gas which is found over time in relation to the number of feet drilled; and (3) the time profile of production from new gas discoveries. The "finding rate" equation includes an estimate of the potential undiscovered reserves of gas in the near-deep zones. Because there is no published data regarding potential reserves in the 10,000-15,000 feet range compared to reserves in the 0-15,000 feet range, ICF made its own estimate of the likely reserves in the near-deep range in order to perform this analysis.

Step 1: Footage Drilled

The projection of the increase in drilling activity in response to incentive prices for near-deep gas is based on the "drilling equation." The parameters of the drilling equation have been estimated according to historical data in the shallow zones over the past decade. The drilling equation is: the number of feet of drilling successfully completed equals a constant multiplied by the adjusted gas price raised to the power .303 multiplied by the number of feet drilled in the previous period raised to the power .695. This means that the rate of increase in drilling in a given year is equal to 30% of the percentage rate of increase in price plus 70% of the rate of increase of drilling in the previous year. The adjusted growth of gas price is equal to the increase in gas price in absolute terms minus the increase in the cost of drilling. Hence, there is opportunity to capture the profit squeeze due to costs rising faster than prices.

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Step 2: Finding Rates

The finding rate is defined as an initial rate with a constant exponential rate of decline over time. The initial finding rate is obtained by extrapolating from existing data. The average successful foot completed in the average "shallow" well of 5,406 feet is 144 Mcf. The average deep, 17,000-foot, well has a finding rate of 372 Mcf per foot successfully completed. Interpolating between these points, the finding rate ranges from 260 Mcf per foot completed at 11,250', 280 Mcf at 12,500', to 310 Mcf for 13,750 feet wells.

The area under the curve of the finding rate must equal the projected undiscovered reserves. ICF constrained this finding rate curve over time so that the area under the curve equalled the potential undiscovered reserves in the near-deep horizons. To obtain an estimate of the potential undiscovered reserves in the near-deep, ICF started with a published reserve estimate (from USGS) of the total gas in the zero to 15,000 foot category IFC then combined data from the NPC on the percentage of oil reserves remaining by depth interval with the USGS and DOE data on the proportion of gas to oil reserves by depth to project the percentage of gas by depth in the Permian Basin, assuming the distribution of gas and oil is the same at depths less than 15,000 feet. Because such data are available only for the Permian Basin, it was then assumed that the percentage depth distribution of gas in the Permian Basin from zero to 15,000 feet was the same elsewhere in the U.S. This procedure found that of the potential remaining reserves at less than 15,000 feet, 11% is in the 0-5,000 feet range; 20% is in the 5-10,000 feet category; and 69% is in the 10-15,000 feet category.

This approach is quite reasonable because it automatically takes into account the fact that there is more gas relative to oil at greater depths. In fact, the ratio of oil to total oil and gas declines from 69% in the zero to 5,000 feet level to 39% in the 10-15,000 feet level.

Step 3: Production/Reserve Ratios

Using production profile data for shallow wells and deep wells, the production/reserve ratio has been interpolated for the near-deep wells. For the average shallow well, the production-to-reserve ratio is .12, and for the deep, 17,000-feet well, the production/reserve ratio is .18. Thus, the production/reserve ratio for the near-deep gas is in the neighborhood of .16. This means that in each year, 16% of the remaining ultimate reserves is produced. It also means that the annual decline rate is 16% and constant throughout the life of the well.

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TABLE 1

GAS PRODUCTION FROM NEW WELLS DRILLED TO A DEPTH BETWEEN 10,000 AND 15,000 FEET (Bcf)

Year	10-15 X Base	10-15 K @ 150% of § 103		10-15 K @ 200% of § 103		10-15 K @ 150% of § 102		10-15 K @ 200% of § 102		Composite*	
		Level	Diff	Level	Diff	Level	Diff	Level	Diff	Level	Diff
1982	367	393	26	415	48	406	39	430	63	401	34
1983	1,018	1,127	109	1,219	201	1,188	170	1,290	272	1,162	144
1984	1,521	1,758	237	1,961	440	1,904	383	2,132	611	1,837	316
1985	1,986	2,334	348	2,628	642	2,555	569	2,886	900	2,447	461
1986	2,481	2,880	399	3,210	729	3,132	651	3,500	1,019	3,008	527
1987	2,957	3,363	406	3,691	734	3,616	659	3,977	1,020	3,490	533
1988	3,387	3,769	382	4,073	686	4,005	618	4,335	948	3,887	500
1989	3,759	4,100	341	4,367	608	4,308	539	4,596	837	4,205	446
1990	4,071	4,362	291	4,587	516	4,538	467	4,778	707	4,451	380
1991	4,324	4,563	239	4,745	421	4,707	383	4,900	576	4,636	312
1992	4,525	4,713	188	4,854	329	4,825	300	4,973	448	4,772	247
1993	4,677	4,818	141	4,923	246	4,901	224	5,010	333	4,863	186
1994	4,788	4,887	99	4,958	170	4,944	156	5,016	154	4,919	131
1995	4,862	4,923	61	4,965	103	4,958	96	4,999	137	4,945	83

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* Composite Scenario:

10-12.5 K @ 150% of §103
12.5-15 K @ 200% of §103

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TABLE 2

GAS WELL DRILLING FOOTAGE FOR WELLS DRILLED TO A DEPTH BETWEEN 10,000 AND 15,000 FEET*

(Millions of feet)

Year	10-15 K Base	10-15 K @ 150% of § 103		10-15 K @ 200% of § 103		10-15 K @ 150% of § 102		10-15 K @ 200% of § 102		Composite**	
		Level	Diff	Level	Diff	Level	Diff	Level	Diff	Level	Diff
1982	17.6	18.9	1.3	19.9	2.3	19.5	1.9	20.7	3.1	19.2	1.6
1983	16.8	19.9	3.1	22.6	5.8	21.8	5.0	24.7	7.9	20.9	4.1
1984	16.2	20.7	4.5	24.6	8.4	23.7	7.5	28.3	12.1	22.0	5.8
1985	19.9	23.5	3.6	26.5	6.6	25.9	6.0	29.3	9.4	24.6	4.7
1986	22.6	25.4	2.8	27.6	5.0	27.2	4.6	29.6	7.0	26.2	3.6
1987	24.5	26.6	1.9	28.2	3.7	27.9	3.4	29.6	5.1	27.2	2.7
1988	25.9	27.5	1.6	28.6	2.7	28.4	2.5	29.6	3.7	27.8	1.9
1989	27.1	28.2	1.1	28.9	1.8	28.8	1.7	29.6	2.5	28.5	1.4
1990	28.0	28.7	0.7	29.3	1.3	29.2	1.2	29.8	1.8	29.0	1.0
1991	28.8	29.3	0.5	29.7	0.9	29.6	0.8	30.1	1.3	29.5	0.7
1992	29.5	29.9	0.4	30.2	0.7	30.1	0.6	30.4	0.9	30.0	0.5
1993	30.2	30.5	0.3	30.7	0.5	30.6	0.4	30.9	0.7	30.6	0.4
1994	30.9	31.1	0.2	31.3	0.4	31.2	0.3	31.4	0.5	31.2	0.3
1995	31.6	31.8	0.2	31.9	0.3	31.8	0.2	31.9	0.3	31.8	0.2

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* Successful well completions only.

** Composite Scenario:

10-12.5 K @ 150% of § 103
12.5-15 K @ 200% of § 103

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TABLE 3

GAS RESERVE ADDITIONS FOR WELLS DRILLED TO A DEPTH BETWEEN 10,000 AND 15,000 FEET
(Tcf)

Year	10-15 K Base	10-15 K @ 150% of § 103		10-15 K @ 200% of § 103		10-15 K @ 150% of § 102		10-15 K @ 200% of § 102		Composite*	
		Level	Diff	Level	Diff	Level	Diff	Level	Diff	Level	Diff
1982	4.6	5.0	0.4	5.2	0.6	5.1	0.5	5.4	0.8	5.0	0.4
1983	4.3	5.1	0.8	5.8	1.5	5.6	1.3	6.3	2.0	5.3	1.0
1984	4.1	5.1	1.0	6.1	2.0	5.9	1.8	6.9	2.8	5.5	1.4
1985	4.9	5.7	0.8	6.3	1.4	6.2	1.3	6.9	2.0	5.9	1.0
1986	5.4	5.9	0.5	6.3	0.9	6.2	0.8	6.7	1.3	6.1	0.7
1987	5.6	6.0	0.4	6.2	0.6	6.1	0.5	6.4	0.8	6.0	0.4
1988	5.7	5.9	0.2	6.0	0.3	6.0	0.3	6.1	0.4	5.9	0.2
1989	5.8	5.8	-	5.8	-	5.8	-	5.9	0.1	5.9	0.1
1990	5.7	5.7	-	5.7	-	5.7	-	5.6	-0.1	5.7	-
1991	5.6	5.6	-	5.5	-0.1	5.5	-0.1	5.5	-0.1	5.5	-0.1
1992	5.5	5.4	-0.1	5.4	-0.1	5.4	-0.1	5.3	-0.2	5.4	-0.1
1993	5.4	5.3	-0.1	5.2	-0.2	5.2	-0.2	5.1	-0.3	5.2	-0.2
1994	5.3	5.2	-0.1	5.1	-0.2	5.1	-0.2	5.0	-0.3	5.1	-0.2
1995	5.2	5.1	-0.1	4.9	-0.3	5.0	-0.2	4.8	-0.4	5.0	-0.2

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* Composite Scenario:
10-12.5 K @ 150% of § 103
12.5-15 K @ 200% of § 103

Senator NICKLES. All our panelists today, and not only this panel, but all of the panelists, your entire statements will be entered into the record, so we would appreciate and do appreciate your cooperation with your oral summary.

Mr. Lawrence?

STATEMENT OF GEORGE H. LAWRENCE, PRESIDENT, AMERICAN GAS ASSOCIATION

Mr. LAWRENCE. Thank you, Mr. Chairman, members of the committee. In addition to our prepared statement we do have two studies attached to it. In one it addresses the erosion of the current tax benefits that would go with the accelerated decontrol proposal by January 1, 1985, and that also addresses the impact of the old gas cushion on pipeline bidding, and we would certainly ask that those be incorporated in the record along with the total statement.

Mr. Chairman, we feel that the title I of the NGPA as Mr. Taliferro has said, has been working amazingly well. Gas well completions, gas drilling activities, exploratory wells completed as gas producers and improving the reserve situation, have all contributed to an improved supply outlook.

We know some of the concerns that our industrial users have had in the past about gas supply, as you undoubtedly will hear about today, but times have changed since the winter of 1977. We have just gone through the most severe winter in this century, and we have had no major supply disruptions, much unlike 5 years ago.

We have had hundreds of thousands of switches from oil to gas, and yet we have had no increase in our residential output and service to gas consumers. Why? Because conservation has taken effect over the past 5-year period, 20 percent. Conservation is still taking effect at the rate of 3½ percent per year, so in short, we see a surplus of gas now. We think that is going to improve.

Now as Representative Gramm has said, and we support that, the repeal of the Fuel Use Act, repeal of title II of the Natural Gas Policy Act, the market restrictions that as Mr. Taliaferro has said are a product of a declining supply resource base, has been proved wrong. We do see some changes over title I in the NGPA, and our primary concern is to defuse the escalators, and we applaud the fact that everybody is focusing on that now, and our other concern is as we address this title I, defuse the escalators, we don't want to see a windfall profits tax creep in.

Another point, we foresee no fly-up in January 1, 1985, as a result of the NGPA schedule if the escalator clauses are defused, or if they are dealt with in a current competitive market situation. If they are not, and they are activated on schedule, we see a significant fly-up of something like 26 percent over and above the normal price increase. The price in 1985, the average residential consumer, would increase from 656 a year to 826 a year, or about $170.00 per year, again a 26 percent increase.

Now although the defusing of escalator clauses is a primary concern and that is needed, we depart from the proposed accelerated decontrol of old gas. Old gas decontrol on an accelerated basis would increase the consumer impact without the concurrent supply advantage, and this is one of the things we focused on in the erosion of tax benefits, and I would invite our industrial user friends to focus on this. Under the business tax credit that the Congress just passed, something like one third of them would be eroded by the accelerated decontrol proposal between now and 1985. This is not a controversial economic projection we are talking about. This is a simple arithmetic difference between two paths of decontrol over the next two years, and 85 percent of that impact is old gas, so we would invite the industrial users that are concerned with our supply to keep that in mind and focus with us, as Mr. Taliaferro said, on the new gas supply.

Now back to the pipeline bidding and disparity and the impact of the old gas cushion. Our other studies show that the pipelines with the large old gas cushions are not the ones that are bidding up the higher prices in greater numbers for the deregulated 107 gas. It is the pipelines that need the gas that have indeed less of the old gas cushion; so similarly do the intrastate markets. We don't see that marked difference between the old gas cushion as causing the problem. We do see a long-term shift there that needs to be addressed. I think that there is an improved resource base in what has heretofore been nontraditional producing areas, and we think that should be addressed by reversing 311(b) where there is greater flexibility in all the pipeline markets, to exchange without being subject to a lot of jurisdiction restrictions, and also that to the continental OCS areas, the inter and intrastate pipelines should be on equal footing.

Again, we commend Senator Johnston, Senator Long, we commend Representative Gramm on their proposals to defuse the escalators and to remove the market restrictions.

I would say this—it will reflect greatly on this Committee and this gas industry and 160 million consumers and the Nation's economy and the country if we do indeed move toward an orderly transition to the deregulated fuel market that we all seek.

Thank you.

[The prepared statement of Mr. Lawrence follows:]

WRITTEN STATEMENT
OF
THE AMERICAN GAS ASSOCIATION
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ON WELLHEAD DEREGULATION OF NATURAL GAS
March 23, 1982

Introduction

I am George H. Lawrence, President of the American Gas Association. The American Gas Association (A.G.A.) is a national trade association, which represents nearly 300 natural gas distribution and transmission companies serving over 160 million U.S. consumers in all 50 states. We are pleased to provide you with our industry's views on possible legislation to amend the Natural Gas Policy Act (NGPA) in order to broaden or accelerate the decontrol of natural gas at the wellhead.

Natural gas currently provides about 27% of the energy consumed in the U.S. Gas is used in about 55% of all residential and commercial establishments in the U.S., and provides almost 40% of the energy consumed by U.S. industry and by U.S. agriculture. Almost all gas used in the U.S. is produced domestically and gas provides two and one half times as much end use energy to consumers as electricity.

As you are well aware, the White House has announced that President Reagan does not plan to seek legislation this year which would broaden or accelerate the NGPA's decontrol schedule. Despite this development, however, today's Hearings are timely;

we therefore commend the Chairman and the membership of this Committee for initiating these proceedings.

We at A.G.A. view these Hearings as timely because the President's decision has not eliminated any of the basic concerns which have fueled the wellhead pricing debate to date. Indeed, the text of the White House announcement makes it clear that the Administration is deferring -- not cancelling -- legislative action on the NGPA. In our own public response to the White House statement, we commended the President for his decision but also urged the Administration to continue to serve as a catalyst for consultations on this subject between all affected parties -- from consumer groups to natural gas producers.

In short, the President's decision has bought the nation time: time that we need in order to fully explore the implications of amending the NGPA and in order to work toward a consensus on the key issues involved. We hope and expect that this time will be put to good use -- and we view today's Hearings as an encouraging sign that it will be.

For purposes of today's proceedings, I will focus on two pivotal questions: First, is there indeed a need to amend the NGPA? Second, if such a need exists, how should the NGPA be amended?

I will discuss each of these questions in turn.

POSSIBLE NEED FOR NGPA AMENDMENT

Changes Which Are Needed

Turning to the first question, I would note that A.G.A. spent almost all of 1981 in an exhaustive examination of the NGPA and of our traditional position on its possible modification. We had already established and articulated a long-standing position in favor of eliminating the Title II incremental pricing program, but we sought a comprehensive review of our traditional support for other provisions of the NGPA. Several member company advisory groups -- ranging from specialized Task Forces to our Board of Directors -- met frequently in an effort to assess this statute. The full range of our membership -- from Northeastern distributors to intrastate pipelines -- participated actively in this process. The result of these deliberations, which were both extensive and intensive, was a broad consensus that we could find only one major flaw in the wellhead pricing provisions of the NGPA: the failure to adequately restrict the operation of indefinite escalator clauses.

We expressed and explained our conclusions -- in considerable detail -- in our testimony before this Committee on November 6, 1981. I will not tax the Committee's time and resources by repeating now what we said on that occasion. However, I will reiterate briefly our basic points.

First, the success of the NGPA in generating new gas production -- and in smoothing the flow of gas between the intrastate market and the interstate market -- has exceeded even A.G.A.'s optimistic expections. We do not believe that a credible case has been made for the proposition that amendments to NGPA Title I would substantially increase the nation's level of gas production above the level we can obtain under present law. Indeed, most proponents of extensive change do not base their case on supply-related arguments.

Certainly, the supply response to the wellhead production incentives in Title I of the Natural Gas Policy Act (NGPA) has been impressive. Seismic crew activity has reached the highest level in 20 years, the rig count for gas drilling has risen notably over 1978-79 levels (from 2500 rigs in mid-1978 to 4500 rigs in December 1981), and drilling activity is at record levels (e.g., total gas well completions for 1981 were up 13.6% over 1980 and exploratory gas wells were up 21.1% over this period). In addition, 778 billion Btu's of gas were discovered for every successful gas well completion in 1980, as compared to 279 billion Btu's of oil and 94 billion Btu's of associated gas discovered per successful oil well. The reserves picture continues the trend started in 1979 -- which showed the best lower-48 states reserve additions in 12 years. In 1980, EIA data shows a 90% replacement of production by new reserves. During 1981 gas production was up over 1% as contrasted with 1980 -- with 1981 gas production at the second highest level since 1974. By contrast, production of deregulated domestic crude oil declined slightly during 1981.

Second, the basic structure of the NGPA decontrol schedule will not in itself generate an unacceptably large "fly up" of wellhead gas prices once partial decontrol occurs in 1985. With wellhead gas prices rising under the NGPA at a much more rapid rate than originally anticipated, with oil prices in at least temporary decline, and with the natural market level for gas at the wellhead likely to fall well below full Btu parity with crude oil, we do not foresee emergence of a substantial gap between the December 1984 price ceilings for new gas and the "market clearing price" which would prevail under free market conditions at the wellhead.

Third, however, the operation of indefinite escalator clauses will in effect act to prevent the development of true free market conditions at the wellhead. Such clauses will operate in a manner which is literally blind to considerations of gas marketability. Instead, in numerous cases, decontrolled prices at the wellhead will automatically follow the lead of index factors which far exceed the natural market level of gas at the wellhead. (Commonly utilized index factors include 110% of No. 2 fuel oil prices and the average of the three highest prices paid to any wells in a given field.) Such blind contractual adherence to unrealistic index factors can only result in massive price increases for gas consumers in 1985: price increases which are not the result of true market forces.

The magnitude of price increases induced by escalator clauses could be massive. A.G.A. estimates that, as a result of the activation of indefinite price escalator clauses alone -- exclusive of other factors -- a wealth transfer of $29 billion from consumers to producers is expected to take place in the year 1985 under the NGPA, because national average wellhead gas prices under the NGPA would rise by 51% in real dollars from 1984 to 1985. Under a total deregulation scenario, a wealth transfer of $52 billion could be expected in 1985.

When these gas price increases induced by escalators are translated to the point of end-use, U.S. gas sales would decline significantly in 1985, with 1.4 Tcf less gas expected to be sold by gas utilities that year than in 1984. Under total deregulation, as much as 2.5 Tcf in gas sales would be lost. These losses would occur primarily in the industrial gas-using sector, since the industrial gas price resulting from indefinite escalators would be much higher than a free market price. Most of the sales lost will be replaced by imported oil and some coal.

The average residential gas heating bill is projected to more than double from $390 in 1981 to $826 (in 1985 inflated dollars). Under a total deregulation scenario, this bill would soar to $977 (in 1985 inflated dollars).

On the other hand, if indefinite price escalators are defused before 1985, average residential gas heating bills would rise from $390 in 1981 to $656 (in 1985 inflated dollars) -- $170 less than the average residential bill projected in 1985 if indefinite price escalators remain in effect under the NGPA _status quo_, and $320 less than under the total deregulation scenario.

In short, we have concluded that neither supply considerations nor alleged defects in the NGPA decontrol schedule actually justify legislative action to amend the wellhead pricing provisions of the NGPA. Legislative action _is_ justified, however, by the need to prevent escalator clauses from generating price increases that market forces alone would not require. Consequently, we advocate legislative action on wellhead pricing for the limited purpose of restricting the impact of indefinite escalator clauses.

We also believe that such legislative action on wellhead pricing should be accompanied by Congressional action to remove artificial statutory constraints on gas demand. Specifically, Congress should eliminate the incremental pricing program -- as embodied in NGPA Title II -- and remove the unreasonable Fuel Use Act restrictions on gas use by new and existing large industrial facilities. These demand constraints were defended in 1978 on the basis of a discouraging gas supply outlook -- but the restrictions make no sense in light of the subsequent major improvements in gas availability.

Changes Which Are Not Needed

I have summarized our conclusions regarding which changes in the NGPA are needed. Our conclusions regarding which changes are not needed flow logically from that starting point.

Specifically, our assessment that the NGPA *status quo* has greatly improved the gas supply outlook leads logically to our view that decontrol of old interstate gas cannot be justified because the price incentives provided would be largely superfluous. We know that the cost impact of short-term old gas decontrol would be enormous; for example, old gas decontrol in 1985 would more than double the price of nearly half of the gas supplies available in that year. In the face of such costs, we can foresee no significant offsetting increase in gas supplies as a result of this action. Frankly, we do not relish the task of explaining to gas consumers that their utility bills are rising sharply but they will obtain no noticeable improvements in supply security as a result.

This Committee should bear in mind that we are discussing the possible decontrol of pre-1977 interstate gas that is already in production. Such gas will continue to flow at present prices, since the initial development costs have been factored into the cost base for current price ceilings and the marginal cost of maintaining production is very small. Consequently, it is difficult to envision how the payment of massively higher wellhead prices for such gas would significantly increase the current level of production from old gas fields.

Of course, we must concede that in scattered cases old gas decontrol would prevent premature abandonment of old gas fields or extend the useful lifetime of certain fields by encouraging enhanced recovery. However, we anticipate that the gas volumes involved would be nominal -- and indefensibly disproportionate to the size of the increase in gas utility bills. In addition, it is entirely possible that the marginal increase in old gas production would be more than offset by declines in otherwise attainable production from new gas fields and deep gas fields. Such gas fields -- which generally pose much greater developmental risks and costs than old gas fields, but which also offer the prospect of much greater supply "pay offs" -- enjoy under current law a wellhead price differential that old gas decontrol would erode or eliminate. Indeed, the Energy Information Administration (EIA) estimates that total decontrol in 1985 would result in reduced gas production over the long term.

Incidentally, our opposition to rapid decontrol of old gas does not necessarily imply that we would oppose moderate and restrained use of the FERC's authority -- under NGPA Section 104(b)(2) -- to increase the price ceilings for old interstate gas. However, Congress explicitly mandated that any such price ceiling increases must be "just and reasonable within the meaning of the Natural Gas Act". We believe that Congress had in mind the interpretation of "just and reasonable" that was prevalent and established at the time of NGPA enactment: that is, the formulation of price ceilings on the basis of historic costs of production plus a reasonable rate of return. Under this established interpretation of Natural Gas Act standards, the use of Section 104(b)(2) can be defended to the extent that a reasonable rate of return, on production of affected Section 104 gas, would not be exceeded -- but price ceiling increases which deviate from traditional Natural Gas Act criteria would be vulnerable to a strong legal challenge. If the FERC's actions are responsive to established Natural Gas Act criteria, however, NGPA Section 104(b)(2) could conceivably serve as a cost effective vehicle for increasing old gas production through prevention of premature abandonment, encouragement of enhanced recovery and promotion of more efficient drainage.

In any event, old gas decontrol would generate a marginal -- or possibly even a negative -- supply response. The price impact, however, would be substantial.[1] A recent A.G.A. analysis -- entitled "Analysis of the Erosion of Short-Term ERTA Tax Benefits Caused by Accelerated Natural Gas Decontrol" -- evaluated the cost impact of a two-year phased shift to total decontrol by 1985. In an effort to avoid the high degree of speculation inherent in estimating the cost impact of old gas decontrol after 1984, we focused solely upon the first two years of such a program. We found that such an approach would increase gas utility bills by $13.7 billion in 1983 and $29.7 billion in 1984. DOE and EIA studies have reported a similar price inpact in 1983-84. The price increases we projected -- during two years when old gas would be simply approaching decontrolled price levels -- would erode the aggregate value of the Economic Recovery Tax Act incentives by 25.4% in 1983 and 41.1% in 1984. (See Attachment 1.) Needless to say, the recent efforts of Congress to revitalize our nation's economy would be gravely undercut by such a development.

Perhaps because the proponents of short-term old gas decontrol implicitly recognize that the supply impact would not even begin to justify the cost involved, most advocates of old gas decontrol have based their case largely upon the assertion that failure to decontrol old gas will lead to dangerously inefficient distribution of the nation's gas supplies in the post-decontrol period.

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[1] An additional problem posed by old gas decontrol is the fact that many old interstate gas contracts contain "area rate clauses" which tie wellhead prices to whatever price ceilings are applicable. If there are no price ceilings to index, litigation over how to interpret "area rate clauses" could throw literally thousands of gas purchase contracts into years of legal uncertainty.

The assertion in question is rooted in the theory that partial decontrol in 1985 -- under the NGPA -- will seriously distort the ability of some pipelines to bid competitively at the wellhead for new gas supplies. The alleged bidding disparity is a result of the fact that some interstate pipelines control proportionately larger amounts of old, low-priced gas -- which will remain under price controls in 1985. This low-priced old gas will supposedly constitute a "cushion" into which those interstate pipelines can allegedly "roll in" comparatively higher bids for newly discovered gas. Consequently, concern has been expressed that pipeline companies with small "cushions" -- including many intrastate pipelines -- will be forced to either withdraw from the bidding competition or match the other pipelines at the cost of rendering their end user prices uncompetitive in certain markets.

Although some bidding disparity problems might develop during the transition period following NGPA decontrol, we believe that in general the problems have been greatly overstated. The evidence to date suggests that the "cushion" theory is largely invalid.

First, although intrastate market reporting requirements are comparatively limited and data on intrastate pipeline bidding patterns is correspondingly scarce, the FERC's extensive reporting requirements provide a data base for assessing whether the "cushion" theory is valid in an interstate market context. Discussion of the "cushion" theory has largely focused upon possible bidding disparities between the intrastate market and the interstate market, but there are also substantial variations amont interstate pipelines in terms of the relative size of each pipeline's old gas "cushion". Thus, if the "cushion" theory is valid, some effect should be surfacing within the interstate market: that is, interstate pipelines with large old gas "cushions" should be bidding higher prices for currently deregulated gas than interstate pipelines with small "cushions".

A.G.A.'s research, however, indicates that exactly the opposite effect is occurring. (See Attachment 2.) Based on FERC data assembled by EIA, A.G.A. has determined that interstate pipelines with comparatively small "cushions" are generally bidding the highest prices for -- and purchasing the largest volumes of -- currently decontrolled NGPA Section 107 gas. In other words, bidding for presently deregulated gas is inversely correlated with the size of an interstate pipeline's "cushion". At the same time, bidding for NGPA Section 107 gas is apparently related to an interstate pipeline's Reserves-to-Production ratio: that is, the ratio that results when a pipeline's total North American reserves under contract are divided by the most recent year's level of annual gas production for that pipeline. We found that prices bid tend to rise as the R/P ratio falls.

Indeed, we found several key correlations. For each of these correlations we determined the statistical level of confidence. By "statistical level of confidence", we mean the probability that the relationship is not coincidental; for example, a confidence level of 99% means that there is only a 1% chance that the correlation is coincidence. In any event, the key correlations are as follows:

- Those pipelines with the largest volumes of price-controlled gas bid the lowest prices for Section 107 gas. (The statistical level of confidence for this correlation is 99%.) Such pipelines also purchase Section 107 gas in comparatively smaller quantities. (90% confidence level.)
- Those pipelines which bid above average prices for price-controlled new gas also bid above average prices for Section 107 gas. (99% confidence level.)
- Pipelines with relatively high R/P ratios are less likely to purchase any Section 107 gas (95% confidence level) and they pay comparatively lower prices for such gas in those cases where they do purchase it. (95% confidence level.) High R/P ratio pipelines also purchase comparatively smaller volumes of Section 107 gas. (90% confidence level.)
- The more Section 107 gas a pipeline purchases, the higher the average price that the pipeline will pay for it. (90% confidence level.)

Let me place a special emphasis on the finding that high bidders for new gas are also high bidders for Section 107 gas. This indicates that new gas, at least, is not "cross subsidizing" Section 107 gas: that is, pipelines are not paying comparatively lower prices for new gas and then using the savings to finance comparatively higher bids for Section 107 gas. Instead, the high bidders for Section 107 gas are also high bidders for new gas -- which suggests that the pipelines in question are seeking to improve their supply position and are willing to pay premium prices for whatever gas is avialable, regardless of whether it is new gas or Section 107 gas. (This conclusion is only common sense, but it does run counter to the popular theory that different categories of gas production "cross subsidize" each other.) In the case of prices paid for old gas, we could find no meaningful correlation at all: that is, the average prices paid by a pipeline for old interstate gas did not seem to affect Section 107 bidding one way or the other. If "cross subsidies" were indeed operating, we would instead have found that high bidders for Section 107 gas were paying comparatively low prices for old interstate gas. Thus, we found no evidence whatsoever of any "cross subsidies". This lack of evidence refutes the argument of some observers that the NGPA's retention of some price controls in 1985 would benefit certain producers, by generating "cross subsidies" from old gas producers to new and deep gas producers, but would not benefit consumers. Our evidence indicates instead that Congress will be treading on unsound ground if it assumes that total decontrol will simply redistribute revenues among producers without affecting consumers one way or the other.

Our findings also strongly suggest that price levels bid for deregulated gas are motivated by a pipeline's long-term supply position -- not by a pipeline's theoretical ability to "roll in" high bids with a "cushion" of inexpensive gas. This conclusion suggests in turn that legislative action to eliminate all pipeline "cushions" would have only a nominal impact on post-decontrol pipeline bidding, since decontrolled gas purchases in 1985 are more likely to reflect long-term supply needs rather than short-term bidding ability. In short, our findings imply that those pipelines which need marginal gas supplies the most will bid the highest prices -- regardless of their theoretical ability to bid or their status as interstate or intrastate pipelines. Conversely, in the absence of a supply motivation, a pipeline will not offer high bids simply because it theoretically can.

Efforts to improve the general level of gas production -- for example, through judicious use of the FERC's incentive pricing authority, adequate funding for gas R&D and diligent development of supplemental gas supply projects with long lead times that provide additional long-term gas supplies -- would be far more effective than old gas decontrol if Congress seeks to discourage high-cushion pipelines from bidding above market prices for marginal gas supplies. This will do more to dampen bidding for marginal gas supplies than arbitrary boosting of old gas prices.

Second, we believe that some observers have misinterpreted the bidding practices of certain interstate pipelines as evidence of the "cushion" theory. The evidence available to us indicates that interstate pipelines are indeed generally buying greater volumes of Section 107 gas than the intrastate pipelines. However, the interstate pipelines are also buying more imported gas and are more actively developing supplemental gas sources in general -- from LNG to Alaskan gas to coal gas.

This does not mean that the typical interstate pipeline is taking advantage of a competitive edge in bidding. The evidence suggests instead that the typical interstate pipeline is playing "catch up ball" -- trying, in the three years since NGPA enactment, to remedy the supply deficiencies that the Natural Gas Act imposed on interstate pipelines but did not impose on intrastate pipelines. Of course most interstate pipelines are seeking marginal gas supplies more aggressively than most intrastate pipelines; the starting point for the interstate market in 1978 was a shortage whereas the starting point for the intrastate market was a surplus.

It is therefore no accident that average wellhead prices for interstate pipelines rose 106% from 1977 through 1979 -- while average intrastate prices rose only 27%. The base was different -- with the interstate pipelines averaging $.78 per MMBtu's in 1977 while the intrastate pipelines averaged $1.31. However, the gap has been closing rapidly. By 1979, the interstate market average had reached $1.15 -- only $.27 below the intrastate market average of $1.42. EIA data indicates that the gap in 1981 was even smaller: an interstate market average of $1.53 for price-controlled gas and an intrastate market average of $1.72 for such gas. The EIA provided data for price-controlled gas only, but -- in light of the greater interstate market volumes of Section 107 gas, imported gas and supplemental gas in general -- we believe that average prices for all gas have reached virtual parity in the two markets. This development suggests that interstate pipelines will generally begin to acquire marginal gas supplies less agressively than they did during the last few years.

Third, as we stressed in our November 1981 testimony before this Committee, whatever bidding advantage the interstate pipelines arguably possess will be short-lived -- since the combination of "category creep" and declining production curves for old gas fields assures that any "cushion" will be largely gone by the late 1980's. We strongly qeustion whether most pipelines would be willing to incur high costs for additional gas supplies on the basis of an alleged bidding advantage that will largely disappear in two to three years -- especially since the expensive new supplies would be under contract for 10 to 20 years.

Fourth, members of this Committee should remember that intrastate pipelines possess inherent bidding advantages that are not evident in the raw price data. Intrastate pipelines are generally closer to new gas fields in their home States, giving them the ability to connect new production at a lower cost, and such pipelines are also much closer to their end use markets, giving them an ability to "roll in" high bids at the wellhead with a "cushion" of comparatively low transmission and distribution costs.

Fifth, although we know that many observers are concerned with the long-term supply outlook for intrastate pipelines, we suspect that some of these observers have targeted the wrong problem -- that is, a "cushion" effect which does not exist to a serious extent -- instead of addressing the more serious problem of a declining resource base in the traditional producing States. Old gas decontrol will not solve this problem; only expanded intrastate pipeline access to new supply sources will solve this problem. Action to provide more expeditious intrastate market access to Outer Continental Shelf gas might be helpful, provided that the door is not opened to access by end users and also provided that the intrastate pipelines are placed on a comparable footing with interstate pipelines (rather than enjoying special advantages). Another possibility would be a "reverse" Section 311(b) -- under which intrastate pipelines could expeditiously purchase gas from interstate pipelines, just as the current version of NGPA Section 311(b) permits a smooth flow of gas in the opposite direction.

In summary, we believe that old gas decontrol would boost consumer gas costs to a substantial degree without significantly increasing gas production levels or significantly improving the distribution of existing gas supplies in the two markets. Further, we have seen no hard evidence that the presence of old gas "cushions" will induce a "market ordering" problem; the abstract and hypothetical foundation of "market ordering" concerns is not supported by the available evidence of what is actually happening in the field. Consequently, we see no justification -- on the basis of either supply concerns or "market ordering" concerns -- for the rapid decontrol of old gas.

Finally, let me note that our strong opposition to short-term decontrol of old gas is tempered by a willingness to seriously consider accelerated decontrol of new gas. In the past, through a long series of legislative debates that ranged from Pearson/Bentsen I to NGPA enactment, A.G.A. stood shoulder to shoulder with producers in actively supporting decontrol of new gas. Old gas decontrol was never an issue in any of those debates. Today, because we recognize the possibility that improved price incentives for new gas might yield a significant supply response, we are receptive to reasonable proposals to alter the pricing policies for new gas.

NATURE OF POSSIBLE NGPA CHANGES

We have stated our view that incremental pricing should be eliminated but that only one change in NGPA wellhead pricing policies is clearly necessary: the adoption of restrictions on the post-decontrol operation of indefinite escalator clauses. We are also aware that this Committee -- if it acts upon our recommendation -- must grapple with the question of how such escalator clauses should be restricted.

We are aware of four specific legislative proposals which include action on escalator clauses: 1) H.R. 5866, which Representative Phil Gramm (D-TX) introduced on March 17, 1982; 2) S. 2074, which Senators J. Bennett Johnston and Russell Long (D-LA) introduced on January 25, 1982; 3) H.R. 5646, which Representative Dennis Hertel (D-MI) introduced on March 1, 1982; and 4) the legislative specifications for the bill that the Administration decided not to introduce. Of the four proposals, the approaches adopted by Representative Gramm and Representative Hertel are the most attractive. Since Representative Gramm initiated the most recent proposal, and since he is a witness today, I will focus upon his proposal.

Representative Gramm -- who was one of the first Congressional legislators to recognize the existence of an escalator clause problem -- has basically proposed a "cap" approach, under which escalator clauses could operate up to a specified price level. However, his "cap" would not be pegged to a specified percentage of Btu parity with crude oil; instead it would be pegged to the average price being paid for new gas in a given region. Representative Gramm's approach -- which avoids some of the uncertainties posed by tying natural gas to the price fluctuations of a competing fuel -- is imaginative and responsive to many of the concerns that have been expressed during the wellhead pricing debate. We are giving serious consideration to this proposal, although we would divorce it from the total decontrol context in which it is presently placed.

It should be noted that neither a "cap" nor an outright prohibition of escalator clauses would constitute an indirect continuation of price controls. Under a "cap", contracting parties could always negotiate a new contract price in excess of the "cap"; the "cap" would simply require such price levels to be consciously negotiated rather than automatic. Similarly, a post-decontrol prohibition of indefinite escalator clauses -- popularly called a "freeze" -- would not prevent contracting parties from reaching whatever price level they choose through mutual agreement.

I would add that any of the major proposals to defuse escalator clauses would be Constitutionally permissible under the Commerce Clause. Indeed, the NGPA has already restricted the operation of certain clauses in contracts which were in effect at the time of NGPA enactment; these restrictions -- including the explicit restrictions on escalator clauses in NGPA Section 313 -- have not been overturned by any court.

We consider it significant and ecnouraging that all of the major proposals to amend the NGPA endeavor to address the escalator clause problem. Although some observers claim that the problem can be solved through voluntary renegotiation, we do not agree -- and we are pleased to see that the authors of the major legislative proposals do not agree either.

We are also pleased that both H.R. 5866 and S. 2074 would eliminate incremental pricing and the Fuel Use Act restrictions on gas use. In addition, we have noted that Representative Gramm -- as well as Senators Johnston and Long -- attempt to provide greater access to Outer Continental Shelf gas by intrastate pipelines. We cannot endorse their specific approaches, which are overly broad and would give intrastate pipelines an access advantage over interstate pipelines, but we are hopeful that these proposals can be revised in order to place interstate pipelines and intrastate pipelines on a truly comparable footing.

We also commend Representative Gramm for including in his bill language which would assure that both pipelines and distributors have the right to pass through gas acquisition costs incurred at the wellhead.

A word is also in order on the concept of tying wellhead price ceilings to 70% Btu parity with crude oil. Both H.R. 5866 and S. 2074 incorporate this concept.

The use of this standard is presumably based on the view of some observers that the natural market level of gas at the wellhead -- that is, the so-called "market clearing price" -- falls in the range of 60% to 70% of Btu parity with crude oil. This conclusion is based in turn on an estimate that wellhead prices in this range, plus transmission and distribution costs, would equal end user prices that are competitive with residual fuel oil prices in key industrial markets.

Frankly, at one point we had tentatively joined in the view that the "market clearing price" falls in the range of 60% to 70% Btu parity with crude oil. Our recent research in this area indicates, however, that wellhead prices in this range would exceed the natural market level of gas at the wellhead. Gas would become uncompetitive with residual fuel oil if average wellhead prices reached such a level.

Consequently, we urge the authors of H.R. 5866 and S. 2074 to alter their reliance on a 70% of crude oil standard.

Let me add that the effectiveness of legislative restrictions on escalator clauses could be enhanced by a discretionary action on the regulation front. If DOE were to initiate a prudent and carefully targeted exercise of its discretionary authority to regulate the rates of gas production on Federal lands (including OCS lands), the rigid "take or pay" obligations in many existing gas purchase contracts could be effectively eased. Such action would in turn create an incentive for producers to be more responsive to considerations of gas marketability.

Conclusion

Thank you for this opportunity to present the views of A.G.A. I would be pleased to answer whatever questions you may have.

ENERGY ANALYSIS

Attachment 1

American Gas Association

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American Gas Association
[illegible]
Arlington, VA [illegible]
[illegible]

1982-4

March 8, 1982

ANALYSIS OF THE EROSION OF SHORT-TERM ERTA TAX BENEFITS CAUSED BY ACCELERATED NATURAL GAS PRICE DECONTROL

A. Introduction

In support of the Reagan Administration's efforts to redirect the U.S. economy away from continued growth of government and to revitalize the private sector, Congress enacted the Economic Recovery Tax Act (ERTA) of 1981, providing for progressive cuts in business and individual taxes during 1981-1984. Now, however, proposals recommended by officials within the Administration and elsewhere involve accelerating the schedule for natural gas price decontrol from that provided under the Natural Gas Policy Act (NGPA) of 1978, which retains price controls on "old" gas (from pre-1977 discoveries) and decontrols "new" (post-1977) gas prices on January 1, 1985. The proposed changes would phase up the prices of all natural gas from NGPA levels in the 1983-84 time-frame and totally decontrol all natural gas on January 1, 1985.

This analysis examines the short-term effects of a two-year phase-out (between 1/1/83 and 1/1/85) of controls on all natural gas prices. It estimates the increased costs of gas to industrial users in 1983 and 1984 and compares these increased costs to the value of business incentives provided in the ERTA during those same years. Finally, it estimates the increase in residential gas bills under this accelerated decontrol and compares these costs to the personal income tax cuts provided in ERTA.

B. Executive Summary of Major Conclusions

If a two-year phase-out of controls on all natural gas is enacted, then the impact of the President's tax program will be offset to a significant degree by higher gas prices paid by all gas consumers.

- Under a two-year phase-out of price controls on all natural gas, the total direct cost of gas to all sectors of the economy would be an estimated $13.7 billion higher in 1983 and $29.7 billion higher in 1984 than total gas costs expected under the NGPA in those years (in inflated 1983 and 1984 dollars, respectively).

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- The total cost to industrial users of a two-year phase-out of controls on all natural gas prices would be $6.2 billion in 1983 and $13.6 billion in 1984. This added gas payment would be equivalent to more than one-third of all the business incentives scheduled for 1983-1984 under ERTA (see Table 1). However, the actual offset of the tax benefits accruing to industrial users alone would be higher, since the business incentive tax cuts apply to both commercial and industrial users.

- With a two-year phase-out of all natural gas price controls, higher residential gas bills would offset much of the individual income tax gains scheduled to take place in the 1983-1984 time frame under ERTA. For example, a family earning $20,000 a year would pay an estimated $121 more for gas in 1984 (in inflated 1984 dollars) under the two-year phase-out compared to the NGPA. This higher gas bill would offset 17%-26% of its scheduled 1984 individual tax cut, with the higher percentage (26%) referring to a family of four with one wage earner.

- The analysis focuses only on the direct effects of a two-year phase-out of all natural gas controls. Such indirect effects as impacts on the price of all goods and services or on economic growth are not evaluated.

C. Methodology and Assumptions

Cases Analyzed

To evaluate the short-term impacts of a two-year phase-out of all controls on natural gas prices, two cases were considered:

- NGPA. This case assumes the continuation of NGPA price ceilings on all gas during 1983-84, except for deregulated ¶107 deep and Devonian shale gas, for which pricing assumptions are given in Appendix C.

- Two-year phase-out. This case assumes that the price of all gas currently subject to NGPA price controls is phased up toward 70% of crude oil by 1/1/85. Gas discovered after 1/1/83 receives the 70% of crude price right away, except for currently decontrolled gas (see Appendix C).

Both cases assume that crude oil prices rise by 1% per year in real terms from actual 1981 levels.

Methodology

A.G.A.'s Total Energy Resource Analysis (TERA) Model was used as the main frame analysis tool in this study. TERA is a publicly available energy supply-demand system of simulation models developed and refined by the American Gas Association over the past ten years. Detailed model documentation is available from the American Gas Association.

Table 1

ESTIMATED EROSION OF INDUSTRY TAX CUTS UNDER TWO-YEAR PHASE-OUT OF NATURAL GAS PRICE CONTROLS

(Inflated Dollars)

	1983	1984
Estimated Total Direct Cost of Gas ($ billion)		
Two-Year Phase-out	$71.0	$95.2
NGPA	57.3	65.5
Increase	$13.7	$29.7
Estimated Total Cost of Natural Gas to Industry ($ billion)		
Two-Year Phase-out	$42.5	$56.9
NGPA	36.3	43.3
Increased Cost	$ 6.2	$13.6
Estimated Value of Business Incentive Provisions of ERTA, Title II ($ billion)	$24.4	$33.1
Estimated Erosion of ERTA Business Incentives by Increased Industrial Gas Costs (%)	25.4%	41.1%

Note: Title II of ERTA applies to both the commercial and industrial sectors. The value to the industrial sector alone of the ERTA provisions would be lower than the total shown here. Therefore, the proportion of industrial tax benefits that would be eroded by higher industrial gas costs would be considerably greater than the estimate shown here.

Source: Gas cost estimated from A.G.A.'s Total Energy Resource Analysis (TERA) Model:
NGPA -- Scenario DM8141R (2/12/82).
Two-Year Phase-out -- Scenario DM8173R (2/11/82).
Estimated value of business incentive provisions of the Economic Recovery Tax Act of 1981 were taken from Joint Committee on Taxation, U.S. Congress, General Explanation of the Economic Recovery Tax Act of 1981, (Washington, D.C., U.S. Government Printing Office, December 29, 1981), p. 395.

- Retail natural gas prices and volumes were read directly from TERA model projections for the cases described in the previous section of this report.

- Direct sale gas prices were derived from the October, 1981 report of the Energy Information Administration entitled "Intrastate and Interstate Supply Markets under the Natural Gas Policy Act".

- Total gas consumption by the industrial sector was calculated as the sum of gas utility sales to the industrial sector plus estimated direct sales to the industrial sector. Direct sales to the industrial sector were estimated as the difference between the estimated availability of direct sale gas shown in TERA and direct sales to powerplants. An average industrial price was then calculated (weighting utility gas sales and direct sales) and multiplied by the total industrial consumption to give a total cost of gas to the industrial sector. Volumes from the NGPA scenario were used for both cases in order to account for the costs of substituting alternate fuels and increasing conservation as gas prices increase.

- Determination of accelerated decontrol impacts on specific family income groups involved several steps:

  1. Average annual gas use for the period from April 1979-March 1980 by households both with and without gas heat classified by family income in 1978 was obtained from the Energy Information Administration's Residential Energy Consumption Survey, April 1981 (see Appendix B).

  2. Gas usage by households without gas heat was subtracted from total usage by households with gas heat to determine heating Btus.

  3. The percentage changes in heating and baseload use per residence over the 1979-1983 and 1979-1984 periods were calculated from the TERA scenarios and applied to the EIA usage numbers to determine 1983 and 1984 heating and baseload consumption by income group.

  4. Heating and baseload consumption for 1983 and 1984 were summed and multiplied by the residential gas prices forecast by the TERA model for each scenario to determine the annual gas bill for heating customers.

  5. Mean income for each income category less than $35,000 was assumed to be the midpoint of the range (e.g., for the 0-$5,000 category, a mean of $2,500 was assumed). $55,000 was assumed to be the mean income for families earning $35,000 or more in 1978.

6. The growth rate of family income for the 1978-1983 and the 1978-1984 periods was derived from the Wharton Econometric Forecasting Associates Annual Model, December 1981 Control Solution. This growth rate was applied to the 1978 income categories to inflate them to current-year dollars. (For purposes of this analysis accelerated decontrol was assumed to have no measurable impact on the growth rate of family income expressed in inflated dollars, as the increase in inflation was assumed to be offset by a slowdown in real economic growth. Therefore, income categories were assumed to be the same for the accelerated decontrol case as for the NGPA case.)

7. The 1983 and 1984 gas bills for each income category were divided by the current-year mean family income for each category to determine the percentage of income which the gas bill represents.

- The total direct cost of gas under each scenario was calculated as the sum of the wellhead cost of utility gas plus the cost of direct gas sales. Volumes from the NGPA scenario were used for both cases in order to account for the costs of substituting alternate fuels and increasing conservation as gas prices increase.

- The estimated 1983 and 1984 values of the individual tax cuts and the business incentive provisions of the Economic Recovery Tax Act of 1981 were taken from General Explanation of the Economic Recovery Tax Act of 1981, published by the staff of the Joint Committee on Taxation, Congress of the United States, December 29, 1981.

- The erosion of the individual income tax cut was estimated for each income category and taxpayer class by taking the increase in the residential gas bill for the pertinent income range as a percentage of the value of the individual income tax cut as estimated by the staff of the Joint Committee on Taxation. This procedure does not allow for variation in the gas bill across taxpayer categories. For example, it might be argued that a married couple with two dependents (taxpayer classes C and E) would consume more gas than a single person, in which case the erosion of the tax benefit would be higher for the married couple with two dependents and lower for the single person than indicated by these estimates.

- The erosion of the business incentive provisions was calculated by dividing the increased industrial gas cost by the total value of the business incentive provisions as estimated by the staff of the Joint Committee on Taxation. However, as stated in the note on Table 1, this calculation seriously understates the erosion of the tax benefit to industry, since the value of the business incentive provisions as estimated by the Joint Committee staff apply to all business -- commercial as well as industrial. It was not possible to derive a consistent estimate for gas costs to the commercial sector since a significant, but unquantified, amount of commercial gas consumption is attributable to tax-exempt commercial facilities (e.g., schools, hospitals, government buildings).

D. Results

A two-year phase-out of all natural gas price controls would increase the national average wellhead price of gas by an estimated 20% in 1983 compared to the NGPA price for that year ($3.16 per MMBtu under the NGPA vs. $3.79 under a two-year phase-out) and by 38% in 1984 ($3.67 vs. $5.06). This would result in a loss of 500 trillion Btus of industrial consumption in 1983 and of 900 trillion Btus in 1984, compared to anticipated levels of industrial consumption under the NGPA. The total cost of the two-year phase-out to industry is estimated to be $6.2 billion in 1983 and $13.6 billion in 1984, wiping out more than one-third of the business incentives scheduled for those years under the Economic Recovery Tax Act of 1981 (see Tables 1 and 2).

Residential consumers, not being so free to switch to alternate fuels, would face prices more than 10% higher in 1983 and nearly 20% higher in 1984 than they would under the NGPA (see Table 2).

While higher-income families would face greater absolute increases in gas costs than would low-income families, the gas cost increase would take a greater proportion of income from the lower income brackets. For example, with a two-year phase-out of natural gas price controls, gas bills for families earning less than $8,000 per year would be $169 higher during 1983-84 than they would be under the NGPA, while the gas bills for families earning more than $56,000 would be $261 higher than under the NGPA during those two years (see Table 3). However, the value of the individual income tax cut is smaller for low income families (see Table 4), so that these families would see a greater proportion of their scheduled income tax cuts offset by increased gas costs than would higher-income families (see Table 5).

At moderate income levels, families earning $20,000 a year would pay an estimated $121 more for gas in 1984 (in inflated 1984 dollars) under the two-year phase-out compared to the NGPA. This higher gas bill would offset 17%-26% of their 1984 tax cut.

The total direct wellhead cost of gas with a two-year phase-out of all controls would increase by nearly $14 billion in 1983 and by nearly $30 billion in 1984 compared to the cost of gas under the NGPA in those years. This increased cost is approximately equal to 11.6% of the value of all ERTA tax provisions in 1983 and 18.3% in 1984 (see Tables 1 and Appendix A).

Table 2

ESTIMATED IMPACTS OF A TWO-YEAR PHASE-OUT OF NATURAL GAS PRICE CONTROLS

	1983		1984	
	NGPA	Two-Year Phase-Out	NGPA	Two-Year Phase-Out
National Average Wellhead Price[1] (Inflated $/MMBtu)	$3.16	$3.79	$3.67	$5.06
Industrial Price[1] (Inflated $/MMBtu)	$3.88	$4.52	$4.50	$5.86
Industrial Gas Consumption[2] (quadrillion Btus)	9.4	8.9	9.6	8.7
Residential Price (Inflated $/MMBtu)	$5.75	$6.36	$6.53	$7.82
Total Residential Consumption (quadrillion Btus)	5.1	5.0	5.0	5.0

[1] Average wellhead price for gas sold to gas utility companies.

[2] Includes direct sales.

Source: Gas prices and quantities derived from A.G.A.'s Total
Energy Resource Analysis (TERA) Model:
NGPA -- Scenario DM8141R (2/12/82).
Two-Year Phase-Out -- Scenario DM8173R (2/11/82).

Table 3

ESTIMATED EFFECT OF TWO YEAR PHASE-OUT OF NATURAL GAS PRICE CONTROLS ON RESIDENTIAL GAS BILLS IN 1983 and 1984

(Inflated Dollars)

Family Income	1983 NGPA	1983 Two-Year Phase-out	1983 Increase	1984 NGPA	1984 Two-Year Phase out	1984 Increase
$0-7,999	$523	$579	$ 56	$575	$ 688	$113
8,000-15,999	518	572	54	575	688	113
16,000-23,999	586	649	63	653	774	121
24,000-31,999	650	719	69	718	860	142
32,000-39,999	696	770	74	771	923	152
40,000-55,999	684	757	73	757	915	158
55,000+	805	890	85	895	1,071	176

Source: Gas Prices derived from A.G.A.'s Total Energy Resource Analysis (TERA) model:
NGPA -- Scenario DM8141R (2/12/82)
Two-Year Phase-out -- Scenario DM8173R (2/11/82).

Gas consumption by income category derived from Energy Information Administration, U.S. Department of Energy, Residential Energy Consumption Survey, DOE/EIA-0262/1 (Washington, DC, U.S. Government Printing Office, April 1981).

Table 4

ESTIMATED VALUE OF INDIVIDUAL INCOME TAX CUTS IN 1983 AND 1984
(Inflated Dollars)

1983

Income	A	B	C	D	E
	Taxpayer Class*				
$ 5,000	51	0	0	0	0
$ 10,000	226	138	78	175	110
$ 15,000	400	297	226	361	283
$ 20,000	610	459	371	554	456
$ 30,000	1,081	844	744	1,016	916
$ 40,000	1,653	1,328	1,188	1,628	1,460

1984

Income	A	B	C	D	E
$ 5,000	57	0	0	0	0
$ 10,000	262	163	83	198	113
$ 15,000	475	372	281	432	333
$ 20,000	723	572	464	662	544
$ 30,000	1,333	1,034	914	1,199	1,079
$ 40,000	2,059	1,618	1,438	1,898	1,697

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*Class A - single person
B - one-earner married couple with no dependents
C - one-earner married couple with two dependents
D - two-earner married couple with no dependents
E - two-earner married couple with two dependents

Source: Joint Committee on Taxation, U.S. Congress, General Explanation of the Economic Recovery Tax Act of 1981, (Washington, DC, U.S. Government Printing Office, December 29, 1981), pages 25-26.

Table 5

ESTIMATED INCREASE IN RESIDENTIAL GAS BILL AS A PERCENTAGE OF INDIVIDUAL INCOME TAX CUT VALUE IN 1983 AND 1984

1983	Taxpayer Class*				
Income	A	B	C	D	E
$ 5,000	110%	**	**	**	**
$ 10,000	24	39	69	31	49
$ 15,000	14	18	24	15	19
$ 20,000	10	14	17	11	14
$ 30,000	6	8	9	7	8
$ 40,000	4	5	6	4	5
1984					
$ 5,000	198%	**	**	**	**
$ 10,000	43	69	36	57	100
$ 15,000	24	30	40	26	34
$ 20,000	17	21	26	18	22
$ 30,000	11	14	16	12	13
$ 40,000	8	10	11	8	9

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*Class A - single person
B - one-earner married couple with no dependents
C - one-earner married couple with two dependents
D - two-earner married couple with no dependents
E - two-earner married couple with two dependents

** Individuals in these categories pay no income taxes.

Source: Calculated from estimated gas bill increases shown in Table 3 and estimated value of individual income tax cuts shown in Appendix A.

Appendix A

ESTIMATED TOTAL COST TO U.S. TREASURY OF THE PROVISIONS OF THE ECONOMIC RECOVERY TAX ACT OF 1981

(Billions of Inflated Dollars)

	1983	1984
Individual Income Tax Provisions (Title I)	$ 85.3	$120.1
Business Incentive Provisions (Title II)	24.4	33.1
Other Provisions*	8.0	8.9
Total	$117.7	$162.1

*Includes savings provisions, estate and gift tax provisions, tax straddles and administrative provisions.

Source: Joint Committee on Taxation, U.S. Congress, General Explanation of the Economic Recovery Tax Act of 1981, (Washington, D.C., U.S. Government Printing Office, December 29, 1981), pp. 392-401.

Appendix B

RESIDENTIAL GAS USE BY INCOME CATEGORY

1978 Family Income ($ 1978)	Residential Gas Use: Households With Gas Heat (MMBtu/Yr)	April 1979-March 1980 Gas Consuming Households Without Gas Heat[1] (MMBtu/Yr)
Less than $5,000	100	38
$5,000 to $9,999	100	31
$10,000 to $14,999	113	23
$15,000 to $19,999	125	32
$20,000 to $24,999	134	30
$25,000 to $34,999	132	43
$35,000 or more	155	44

1/ These are households which use gas for any and all the following: clothes drying, cooking and hot water.

Source: Energy Information Administration, U.S. Department of Energy, Residential Energy Consumption Survey: 1979-1980 Consumption and Expenditures (Washington, D.C., U.S. Government Printing Office, April, 1981).

Appendix C

PRICING ASSUMPTIONS COMMON TO BOTH THE NGPA AND TWO-YEAR PHASE-OUT SCENARIOS

1. §107 Prices. §107 gas of 1977-82 vintage assumed to be priced at 110% of the distillate fuel oil Btu-equivalent price. §107 gas from 1983 and 1984 discoveries assumed to receive the 1982 price for §107 gas.

2. Retail Pricing. Repeal of incremental pricing assumed effective 1/1/82.

3. Fuel Substitutability. 75% of gas in industrial and electric utility boilers assumed able to switch to alternate fuels in any one year.

ENERGY ANALYSIS - Attachment 2

AGA
American Gas
Association

Policy Evaluation & Analysis Office
American Gas Association
1515 Wilson Boulevard
Arlington, VA 22209
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1982-5 March 19, 1982

A STATISTICAL ANALYSIS OF BIDDING TRENDS FOR DECONTROLLED NATURAL GAS UNDER THE NGPA

Background

One of the two key assumptions underpinning any analysis of alternative wellhead gas decontrol policies is the impact controlled gas has on the bidding behavior of pipelines for decontrolled gas. The other key assumption involves "indefinite" price escalator clauses in two-thirds of all gas purchase contracts. These clauses, which would be triggered by decontrol, would force large volumes of gas above free market price levels. This latter issue is a contract (non-economic) problem and must necessarily be addressed through legislation -- under present law the necessary regulatory authority to remedy this problem may not exist. The former issue -- how the gas cushion (i.e., controlled, low priced gas inventory) will impact pipeline bidding for new decontrolled gas -- is central to forecasting average gas prices and volumes under "partial" wellhead decontrol as scheduled for 1985 under existing law.

The Natural Gas Policy Act of 1978 (NGPA) decontrolled certain limited quantities of "high cost" gas in 1979 (e.g. deep gas below 15,000 feet) and will decontrol most new gas (i.e., post-1976 gas) in 1985. This type of decontrol has been labeled "partial" decontrol because it does not decontrol old flowing gas volumes.

The purpose of this analysis is to examine pipeline bidding behavior to date for Section 107 gas (principally decontrolled deep gas) to determine whether pipelines are bidding for this high priced gas in order to rebuild their reserve-to-production ratios (R/P), or because of the size of their respective gas cushions. Extensive data on interstate pipeline supplies of Section 107 gas, making this statistical analysis possible, was published by the U.S. Department of Energy, Energy Information Administration, in a report entitled, "An Analysis of the Natural Gas Policy Act and Several Alternatives".[1]

Executive Summary

The following conclusions are based on statistical analysis of data contained in the draft EIA report, cited above.

- Interstate gas pipelines holding large gas cushions have been relatively reluctant to bid aggressively

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for deep gas which is decontrolled under Section 107 of the NGPA. To illustrate, there is a significant (99% confidence level) inverse correlation between the size of a pipeline's gas cushion and the price it pays for Section 107 gas.

- There is also a positive correlation (90% confidence level), between the price of a pipeline's gas cushion and the percentage of Section 107 gas in its supply mix (i.e. pipeline's with low priced cushions have been reluctant to purchase Section 107 gas).

- Likewise, a strong inverse correlation exists (95% confidence level) between a pipeline's reserves-to-production ratio (R/P) and its willingness to purchase Section 107 gas (i.e., pipelines with high R/P ratios have generally purchased less Section 107 gas at lower prices). This would indicate that Section 107 gas purchases are being made to strengthen long-term gas reserve positions.

The strong inverse correlation between Section 107 gas purchases and both the size of pipelines' gas cushions and their R/P ratios would appear to contradict the theory that pipelines with large gas cushions remaining after most gas is decontrolled in 1985 under the NGPA would rush into the market in 1985 to bid-up the price of decontrolled gas above a long-run competitive market level or bid away supply from companies with smaller gas cushions. These correlations suggest that pipeline gas purchases may be based at least in part, on long-term gas requirements -- not just on short-term market conditions.

Discussion of Results

Table 1 illustrates the relationship between a pipeline's willingness to purchase Section 107 gas and the size of its gas cushion (all currently price controlled gas). As the table clearly illustrates, companies with large gas cushions have been reluctant to bid aggressively for Section 107 gas. Companies whose willingness to purchase Section 107 gas was categorized as "High" had, on average, "small" gas cushions. Companies whose Section 107 bidding was categorized as "Medium" had, on average, "average" size gas cushions. While companies with a "Low" rating for Section 107 gas purchases had, on average "large" gas cushions. The size of a pipeline's gas cushion (pre-1977 "old" gas and post-1977 price controlled "new" gas) was calculated by multiplying the percentage of a company's price controlled gas supplies times the reciprocal of the average price paid for these supplies. The rationale behind this calculation is set forth in the Methodology section.

Table 2 shows the relationship between the willingness of a pipeline to purchase Section 107 gas and its R/P ratio. This table illustrates that companies with relatively large R/P ratios are less aggressive in their bidding for Section 107 gas.

Table 1

RELATIONSHIP BETWEEN "GAS CUSHION" AND SECTION 107 GAS PURCHASES

Willingness to Purchase Section 107 gas Category	Willingness to Purchase Section 107 gas Index1/	Gas Cushion: Average Price of Cushion Gas2/ ($/MMBtu)	Gas Cushion: Cushion Index3/
High	81	$1.98	46
Medium	32	$1.75	54
Low	5	$1.69	60
Average	37	$1.80	54

1/ Index calculated by multiplying the percentage of pipeline purchases for 1981 that are Section 107 gas times the average price paid by that pipeline for Section 107 gas.

2/ Average pipeline gas acquisition cost excluding Section 107 is one measure of gas cushion.

3/ Index calculated by multiplying percentage of gas purchases that are "cushion gas" times the reciprocal of the price paid for this gas.

Table 2

RELATIONSHIP OF RESERVE PRODUCTION (R/P) RATIO TO SECTION 107 PURCHASES

Willingness to Buy S. 107 gas Index[1]	Average 1979 R/P Ratio[2]	Range 1979 R/P Ratio
High	7.3	4.8-10.0
Medium	8.9	3.6-13.5
Low	10.4	7.7-16.7
Average for entire sample	8.9	3.6-16.7

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[1] Calculated by multiplying pipeline's average purchase price for Section 107 gas times the percentage of Section 107 gas in its supply mix. Source: An Analysis of the Natural Gas Policy Act and Several Alternatives (December 1981, Energy Information Administration, Washington, D.C.), p. 66.

[2] Excludes non-North American reserves. Source: Gas Supplies of Interstate Natural Gas Pipeline Companies -- 1979 (June 1981, Energy Information Administration, Washington, D.C.).

The results in this Table support the theory that Section 107 bidding to date has been characterized by interstate pipelines attempting to rebuild weakened reserve positions -- the result of pre-NGPA Federal regulation of wellhead gas prices at artificially low levels.[2]

Based on the published EIA data, the following correlations exist (with an indication given of the level of confidence with which each statement can be made):

Very Strong Correlation -- 99% confidence level that a correlation exists

1. The higher the percentage of non-Section 107 gas volumes (both "old", pre-1977 and "new" post-1977 gas) in a pipeline's supply mix, the lower the price paid for Section 107 gas.

2. The higher a pipeline's average price for "new" gas, the higher its average price for Section 107 gas.

Strong Correlation -- 95% confidence level that correlation exists

1. The higher a pipeline's R/P ratio (excluding reserves attributable to LNG imports), the lower its average purchase price for Section 107 gas.

2. The higher a pipeline's R/P ratio (excluding LNG), the lower its willingness to buy Section 107 gas.

Medium Correlation -- 90% confidence level that a correlation exists

1. The higher the R/P ratio (excluding reserves attributable to LNG imports), the lower the quantity of Section 107 gas purchased.

2. The higher the price of non-Section 107 gas, the greater the percent of Section 107 gas by volume in pipelines' gas purchases.

3. The higher the percentage of "old" gas in a pipeline's supply mix, the lower the percentage of Section 107 gas.

Methodology

The new preliminary draft Energy Information Administration (EIA) report[3], as discussed above, was used to ascertain information on projected individual pipeline purchases of old (pre-1977), new (1977-1981) and high cost (Section 107) gas -- both prices and volumes for 1981/1982 as shown in each pipeline's

PGA filing. While the report does not necessarily represent pipeline bidding behavior, on an individual basis, for each pipeline listed because of the EIA sampling methodology, it should be relatively accurate in aggregate for the industry. A second EIA report[4/] was the source of reserve-to-production ratios for these same pipelines. The twenty interstate pipelines examined represent between 90%-95% of total interstate gas purchases and have under contract or own about 95% of the proven gas reserves dedicated to interstate commerce.

The correlation calculations detailed in this analysis measure the strength of the relationship between two sets of variables (e.g. willingness to purchase Section 107 gas and size of old gas cushion). Twenty-one of the calculations undertaken are displayed in Appendix A. A positive correlation indicates a direct relationship between two variables and a negative correlation shows an inverse relationship between variables. A correlation between variables does not indicate a cause-and-effect relationship.

Correlation coefficients (the measure of a relationship between variables) were calculated for a number of sets of variables. Then a statistical test (referred to as a "t" test) was undertaken to ascertain a confidence level (i.e., measure of confidence that a correlation exists) for the variables examined. If the "t" test showed a 99% confidence level, the correlation was determined to be "Very Strong". Confidence levels of 95% and 90% were labeled "Strong" and "Medium", respectively. All correlations satisfying the "t" test to the 90% confidence level were considered significant.

For this analysis, a pipeline's willingness to purchase Section 107 gas was determined by multiplying the percentage of Section 107 gas in a pipeline's current supply times the average price of that pipeline's Section 107 gas. The top six interstate pipelines were labeled as having a "High" willingness to buy Section 107 gas, the middle seven and last seven interstate pipelines were categorized as "Medium" and "Low", respectively.

The size of a pipeline's gas cushion was calculated by multiplying the percentage of gas supplies under price controls times the reciprocal of price of that gas. Pre-1977 gas supplies not subject to decontrol in 1985 and post-1977 price controlled gas supplies were first added together and then calculations were made to derive the cushion index.

Implications of Results

Pipeline purchases of gas today (in an environment where only about 5% of available supplies are decontrolled) cannot be used with certainty to forecast pipeline bidding behavior in 1985 when about 60% of available gas supplies will be decontrolled. Therefore, the results of this analysis cannot be cited to prove that predatory bidding will not occur under the NGPA in 1985. In fact, purchases of Section 107 gas to date show that most pipelines have "used" part of their cushions to purchase decontrolled gas at above a free market price.

This analysis does imply that long-term gas requirements have been (and will continue to be) a major factor in a pipeline's decision to purchase decontrolled gas. Given this long-term outlook, it is unlikely that the price of decontrolled gas in 1985 would be bid-up to a level that the average price of gas (including "old" controlled gas) would equal a short-term market clearing price.

The following conclusions are supported by this analysis:

(1) Pipelines' bidding behavior for Section 107 gas under the NGPA thus far cannot be used to substantiate the theory that their relative "cushion" sizes will determine their purchase practices for decontrolled gas in 1985 under the NGPA.

(2) Pipeline bidding behavior for decontrolled gas in 1985 is likely to reflect long-term gas requirements, among other factors, not just ability to pay (a function of gas cushion).

(3) Decontrolled gas in 1985 under the NGPA will not reach a level such that the average price of all gas will be as high as the short-run market-clearing level -- assuming that the "indefinite" price escalator problem is resolved.

Addendum

Two additional hypotheses on the rationale behind pipeline Section 107 gas purchases were statistically tested in conducting this analysis:

(1) There is no statistically significant correlation between the size of a pipeline's "old" gas cushion and its preference for either Section 102 or Section 107 gas purchases.

(2) There is no statistically significant correlation between a pipeline's growth in sales between 1978-1980 and either its average purchase price for Section 107 gas or the percentage of Section 107 gas in its supply mix.

Appendix A

STATISTICAL CORRELATIONS BETWEEN SECTION 107 GAS PURCHASES, GAS CUSHION, AND R/P RATIO[1]

	Average Price of Section 107 Gas	Percentage Section 107 Gas in Supply Mix	Willingness to Buy Section 107 Gas Index
Price -- "new" controlled (Post-1977) gas	99% confidence positive correlation	Inconclusive	90% confidence positive correlation
Percentage -- "new" controlled gas	95% confidence inverse correlation	Inconclusive	Inconclusive
Price -- "old" gas (pre-1977)	Inconclusive	Inconclusive	Inconclusive
Percentage -- "old" gas	Inconclusive	95% confidence inverse correlation	90% confidence inverse correlation
Price -- all cushion gas[2]	Inconclusive	90% confidence positive correlation	90% confidence positive correlation
Percentage -- all cushion gas[2]	99% confidence inverse correlation	Unity	99% confidence inverse correlation
Pipeline R/P ratio[3]	95% confidence inverse correlation	90% confidence inverse correlation	95% confidence inverse correlation

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[1] The confidence level shown in this Table indicates the probability that a correlation exists between the variables shown.

[2] "All Gas Cushion" includes gas supplies subject to price controls, both "new" post-1977 gas and "old" pre-1977 gas.

[3] R/P ratio (reserve to production ratio) is a measure of the North American reserves dedicated to a particular pipeline divided by that pipeline's current gas sales.

ENDNOTES

1. An Analysis of the Natural Gas Policy Act and Several Alternatives (December 1981, Energy Information Administration, Washington, D.C.), p. 66.

2. Reserve to Production (R/P) ratios are important to a pipeline because: (1) They provide assurance to pipelines' customers as regard on long-term gas commitments; and (2) There are often covenants in financial obligations of pipelines which are tied to R/P ratios.

3. An Analysis of the Natural Gas Policy Act and Several Alternatives, p. 66.

4. Gas Supplies of Interstate Natural Gas Pipeline Companies -- 1979 (June 1981, Energy Information Administration, Washington, D.C.).

Senator NICKLES. Thank you, Mr. Lawrence. Mr. Seder?

STATEMENT OF ARTHUR R. SEDER, JR., CHAIRMAN, INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA

Mr. SEDER. Mr. Chairman, members of the committee, my name is Arthur R. Seder. I am chairman of the board of Michigan-Wisconsin Pipeline Co. which is a principal supplier of natural gas to the States of Michigan and Wisconsin and I am also currently serving as chairman of the Interstate Natural Gas Association of America, which represents the interstate natural gas transmission industry. Mr. Jerome McGrath who is president of INGAA appeared before this committee on November 6, 1981. He noted then that NGPA had on balance worked well.

We foresaw very serious problems beginning in 1985 when approximately 60 percent of the gas flowing in the interstate market will be freed of price controls under the NGPA. Our basic concern was then, and still is, that most existing natural gas contracts contain indefinite pricing clauses which with the advent of deregulation on January 1, 1985, will cause the average price of flowing gas to increase dramatically with a resultant significant loss of industrial load and serious adverse impact on residential and commercial gas users.

We later did an extensive analysis quantifying the effect on gas prices of NGPA as is and under various approaches to amendment of the act. INGAA believes that deregulation must still be the ultimate goal, but the transition to a deregulated field acquisition price must be made as smoothly as possible so as to minimize market and industry dislocations.

INGAA has made the following recommendations for amendment of title I of the NGPA which we felt provided a middle ground between the DOE proposal for quick deregulation of both old and new gas, and the consumer position against any change in NGPA.

We propose establishing a capping mechanism for natural gas that will phase the field acquisition price of natural gas up to a market level beginning January 1, 1983. Gas presently scheduled for decontrol under NGPA would be phased out over 36 months, and forever regulated gas over 60 months.

New gas contracted for after date certain established by the new act would receive a capped price immediately. The cap would cease to operate at the end of the phase-out period except for any contract containing indefinite pricing clauses made before the date of the legislation.

The price of high-cost gas under section 107 gas would be frozen under existing contracts until such price becomes equivalent with the capped price, and thereafter the price of such gas would advance or decline with the cap.

Under our proposal, substantial decontrol is achieved since the cap would continue to operate beyond the phase-out period only with respect to contracts which contain indefinite pricing clauses. Even these contracts would be decontrolled when and if the parties renegotiate them. However, our capping proposal would prevent a massive flyup of prices resulting from operation of the indefinite pricing provisions.

From the standpoint of the consumer, an evenly phased increase in prices to market clearing levels is obviously preferable to large increases at one time. Our proposal would result in significantly less cost to consumers than if NGPA is left as is.

Mr. Chairman, we believe the NGPA must be amended sooner or later because of the need to address the contracts problem. We urge the Congress, therefore, to start the process now which will lead to a smooth transition to ultimate decontrol, and Senator Johnston, responding to your general question at the outset, we believe that the proposal that a cap be fixed in relation to the weighted average price of gas in some preceding period has considerable merit and should certainly be discussed very seriously. We would favor that if that approach were used as opposed to taking the highest three prices in the field for the reasons that Mr. Gramm mentioned, plus the fact that I think a weighted average price is a better indicator of the going price of gas in the field than what might be atypical contracts.

We would be pleased to discuss the problems engendered by NGPA and INGAA's proposed soluton to them with the Committee at any time.

[The prepared statement of Mr. Seder follows:]

STATEMENT OF ARTHUR R. SEDER, JR., CHAIRMAN OF THE BOARD INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

March 23, 1982

Mr. Chairman and Members of the Committee:

My name is Arthur R. Seder. I am Chairman of the Board and Chief Executive Officer of the American Natural Resources Company and the Michigan-Wisconsin Pipeline Company, a principal subsidiary. I am currently serving as Chairman of the Interstate Natural Gas Association of America (INGAA) and it is in this capacity that I appear before the Committee today. Accompanying me today is Jerome J. McGrath, President of the Association.

INGAA is a national trade association representing the interstate natural gas transmission industry. INGAA member companies account for over 90% of all natural gas transported and sold in interstate commerce. All of our member companies are subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC) as mandated by the provisions of the Natural Gas Act (15 U.S.C. 717, et seq.) and the Natural Gas Policy Act (15 U.S.C. 3301, et seq.). Obviously, our industry has a vital stake both in the adequacy of the NGPA "as is" and in any amendments suggested to that Act.

Mr. McGrath appeared before this Committee on November 6, 1981 during the Committee's oversight hearings on the implementation of Title I of the Natural Gas Policy Act (NGPA). At that time Mr. McGrath noted that although we believed the NGPA had, on balance, worked well, we foresaw very serious problems beginning in 1985 when approximately 60% of the gas flowing in the interstate market will be freed of price controls under the NGPA. Our basic concern was then and still is that most existing natural gas contracts contain indefinite pricing clauses, which, with the advent of deregulation on January 1, 1985, will cause the average price of all flowing interstate gas to increase dramatically, with a resultant significant loss of industrial load and a serious adverse impact on residential and commercial gas users.

On December 7, 1981 at the invitation of this Committee, INGAA filed with the Committee a supplemental statement containing our legislative recommendations and a detailed analysis of the effect of decontrol under various decontrol proposals. This analysis, which was based upon a survey of 24 pipelines which purchased or produced 96.6% of the interstate gas supply in 1979 demonstrated that INGAA's fears of a massive fly-up in average gas prices was well founded.

At the time Mr. McGrath testified before the Committee there was little awareness of the contract problem outside the industry, and even some disagreement within the industry as to whether a problem existed. I think it is fair to day that in the four months that have passed since those hearings took place public awareness and understanding of the fly-up problem has increased dramatically. Attached to my testimony are pertinent excerpts from recent statements by the DOE, the Chairman of the FERC, user groups, and others, all demonstrating concern with the potential contract problem in 1985. Indeed, Mr. Chairman, I believe that today the issue is no longer whether or not the potential for this fly-up exists, but rather how do we go about correcting the problem.

For the record, let me briefly recap the nature of the problem. As the Committee is aware, many natural gas contracts contain indefinite pricing clauses which we believe will be triggered upward to the highest level of field prices when certain categories are decontrolled. Indefinite pricing clauses, as they appear in deregulation provisions of gas purchase contracts, consist of various types. Some clauses call for a redetermination or renegotiation of price to a competitive level. Other options may provide an opportunity to redetermine the price to equate to the Mexican or Canadian import price or the average thereof. Another variable allows the producer the option in the event of deregulation to select prices based upon Btu equivalent prices of fuel oil or some percentage thereof. For example, some clauses call for prices equivalent to 110% of No. 2 fuel oil. Perhaps most significantly, a great many contracts contain clauses which allow the producer the right to increase his gas price to the average of the two or three highest wellhead prices in a given area. Newer contracts in particular may contain two or more options and the producer has the right to choose that option which will yield the highest price. In addition, many of the contracts call for price escalation at a regular rate, for example, 1% per month. Further, additional redeterminations of price are often permitted periodically throughout the term of the contract, if requested by the producer. Finally, there are very limited provisions for downward price adjustment. It is the triggering of these various clauses that threatens to drive the average price of gas to extremely high levels in 1985.

INGAA believes that deregulation must still be the ultimate goal, but not at the expense of the natural gas industry and the millions of consumers it serves. The transition to a deregulated field acquisition price must be made as smoothly as possible so as to maximize the ultimate benefits to all. Therefore, INGAA has proposed a legislative solution which was formulated to achieve price decontrol while protecting consumers against a massive fly-up of prices and helping to ensure that gas prices not exceed a market clearing level.

INGAA recommends that Title I of the NGPA, and other pertinent provisions thereof, be amended so as to:

1. establish a capping mechanism for natural gas that would phase the field acquisition price of natural gas (including all adjustments such as production related costs and severance taxes) up to a market clearing level beginning 1/1/83;

2. phase up to the cap price over 36 months the price of gas scheduled for decontrol under NGPA and currently under contract;

3. phase up to the cap price over 60 months, the price of forever regulated gas, e.g., old gas as defined in Section 104 of the NGPA;

4. provide that gas contracted for after a date certain (e.g., date of introduction of legislation) would receive the cap price immediately, such cap to remain in place until the end of the phase out period;

5. freeze the price of high cost gas (Sec. 107) until such price becomes equivalent with the cap price. Thereafter, the price of high cost gas would advance or decline with the cap;

6. provide that the cap would cease to operate after the end of the phase out period except for any contracts containing indefinite pricing clauses made before the date of legislation (the cap would cease to apply to such contracts when rolled over or renegotiated);

7. require the Federal Energy Regulatory Commission (FERC) to review the price cap level periodically to determine whether it is truly representative of the market clearing price for natural gas.

Under our proposal, substantial decontrol is achieved since the cap would continue to operate beyond the phase out period only with respect to contracts made before the date of enactment which contain indefinite pricing clauses. Even these contracts would be decontrolled when and if the parties renegotiate them. From the standpoint of the consumer, an evenly phased increase in prices to market clearing levels is obviously preferable to massive increases at one time. Our proposal would result in significantly less costs to consumers than if the NGPA is left "as is."

Another approach considered by INGAA was one under which the parties would be encouraged to renegotiate pricing clauses during a moratorium period. However, INGAA concluded that it would be difficult to develop an approach that would provide a compelling incentive to both pipelines and producers to achieve such renegotiation. Royalty payments and state tax problems would complicate such a approach and stockholders of producers might seriously question the giving up of contract rights to certain price levels. A given producer when asked to renegotiate would quite legitimately ask whether other producers are doing the same. The massive problem of trying to simultaneously renegotiate thousands of existing producer contracts is obvious. In short, the possibility of renegotiation on a significant scale to resolve the indefinite pricing clause problem during any reasonable short moratorium period is not a practical one in our judgment. On the other hand, our proposal does not foreclose the possiblity of renegotiating contracts if the parties choose that method of dealing with indefinite pricing clauses.

Furthermore, mere invalidation of indefinite pricing clauses would not be a realistic solution to the problem. Any attempt to invalidate such clauses would undoubtedly be judicially challenged on constitutional grounds with considerable delay before final court decision. This would lead to needless uncertainty as to planning and contracting for new gas supplies. However, assuming the constitutionality of such invalidation, the problem would arise as to what pricing mechanism would then be substituted. The only mechanism left in the contract would be a stated contract price which, under older contracts, certainly would not be representative of a fair value of the gas at this time.

In view of the recent declining level of crude oil prices since our study was released, INGAA commenced an analysis to determine the effect of this trend on our previous study. We can only speculate whether the current decline in world oil prices is a short run phenomenon or indicative of a fundamental shift in energy consumption and pricing patterns. Regardless, these recent events confirm the need for a solution to the indefinite pricing problem which provides flexibility for natural gas prices to adjust to changes in market conditions. The INGAA approach would provide this flexibility.

In addition to the capping mechanism suggested herein, INGAA has also proposed that legislation address the following subject:

- Incremental Pricing and Fuel Use Act Restrictions on the Use of Natural Gas such as statutory limitations on gas use should be eliminated.
- Affiliate Pipeline Production and Pipeline Owned Production
  Affiliate pipeline production should continue to receive treatment as under the NGPA. With the phase up of Section 104 gas prices for eventual decontrol, pipeline produced gas (including cost of service gas) at the wellhead should be governed by the applicable first sale provisions of Title I of the NGPA, as amended.
- Flow-Through Pursuant to PGA
  Specific provision should be made to assure flow-through of prices paid.

With regard to intrastate access to offshore gas supplies, it should be understood that intrastate pipelines have ready access to offshore gas supplies. Any intrastate company, by creating an affiliated but separate corporate entity that would be subject to the same certificate and rate conditions as interstate pipelines, would be free to purchase offshore gas from its affiliate for use or sale within the state in which they operate without being subject to any further FERC jursidiction. Furthermore, we would support an amendment to Section 311(b) of the NGPA to permit interstate pipelines to sell gas to intrastate pipelines. Such an amendment would greatly enhance the flexibility of intrastate and interstate pipelines to meet the needs of gas consumers.

Finally, INGAA has been particpating in discussions with various groups and congressional representatives on proposals to phase out and eventually decontrol natural gas prices. The following are some of the more important differences between the INGAA proposal and others currently being considered:

1. Several would provide for a single track phase out of controls on all gas, both new (as defined in the NGPA) and forever regulated (Sec.

104, etc.) by 1/1/85. It is our position that new gas be phased out over a three-year period, beginning 1/1/83, and forever regulated gas be phased out over a five-year period, beginning 1/1/83 and ending 12/31/87. Phasing out controls on new and forever regulated gas more rapidly, i.e., by 1/1/85 could have a very deleterious impact not only on natural gas markets overall, but also would be disruptive of the effort to achieve a smooth transition to decontrol.

2. The maximum lawful price in the proposals would be exclusive of severance taxes and production-related costs. Under INGAA's proposal, the maximum lawful price would include severance taxes and production-related costs. We feel that the maximum lawful price established by the capping mechanism must be inclusive of such costs if natural gas is to remain competitive with Number 6 fuel oil during the phase out period.

3. Intrastate pipelines would be permitted to move gas (through the use of interstate facilities) from one state to another state for resale without coming under the jurisdiction of the Federal Energy Regulatory Commission. INGAA strongly opposes this proposal. It would clearly place interstate pipelines at a disadvantage vis-a-vis the intrastate pipelines and would do violence to the whole scheme of interstate regulation as set forth under the Natural Gas Act and the Natural Gas Policy Act. However, an amendment to Sec. 311(b) would, as I previously mentioned, be a more appropriate way to address this situation.

4. The proposal to eliminate the existing provisions in the NGPA providing for the right of first refusal for gas committed or dedicated to interstate commerce, we find especially disturbing. We understand that it is intended not to grandfather out existing contracts. We would strongly oppose such an amendment.

5. In some proposals, the indefinite pricing clause problem is addressed by a concept similar to that advocated by INGAA. They propose, however, that all controls end by 1990 regardless of whether contracts still contain indefinite pricing clauses. This could encourage producers not to renegotiate contracts containing such clauses. Under INGAA's proposal, producers would be encouraged to renegotiate contracts and could use new gas supplies as leverage to encourage pipelines to renegotiate.

Mr. Chairman, we recognize the difficulties, both politically and practically, in seeking legislation to amend the Natural Gas Policy Act. There are few issues that generate more controversy. However, we believe that NGPA must be amended sooner or later, and as we have said many times before, we believe it should be sooner rather than later, to address the contract problem. Without amendments to defuse the triggering of indefinite pricing clauses prior to January 1, 1985, the massive fly-up in gas prices which we believe will occur could have disastrous results. We urge the Congress, therefore, to start the process now which will lead to a smooth transition to ultimate decontrol.

We would be pleased to discuss the problems engendered by the NGPA and INGAA's proposed solution to them with you or your staff at any time.

Thank you.

PERTINENT EXCEPTS REGARDING CONTRACT PROBLEMS

In its Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices, issued in August 1981, the Energy Information Administration of the Department of Energy noted that:

> "Some gas contracts contain clauses that peg the gas price to a Btu-equivalence with oil in the event of deregulation. Since this is not a common contract clause, it is not important in itself. But apparently some gas contracts have provisions that require escalation of the price to some combination of the highest prices in a producing area. A few contracts that price gas at the oil equivalent price could trigger a chain reaction, leading to significant quantities of gas priced above what the market could support and potential financial difficulties for pipelines."

Chairman C. M. Butler of the FERC in remarks before the Wall Street Utility Group, Hyatt Regency, Washington, D.C., on January 22, 1982, said:

> "On January 1, 1985, additional categories of gas will be deregulated, bringing the total amount of deregulated gas to nearly 60% of the domestic supply. We expect a large majority of the contracts for the sale of this deregulated gas will contain indefinite pricing provisions that will cause prices for the newly deregulated gas to virtually explode upwards."

On December 22, 1981, in a ~~statemnt~~ statement to an Ad Hoc Group of 30 organizations all of which are engaged in rendering gas utility service to the general public, the United Distribution Companies stated:

> "The catastrophic effect of clauses now in being, however, is that they will inevitably and arbitrarily increase field prices above those market

> values which can be tolerated by the utility market in short, above market clearing levels."

The Process Gas Consumers Group and other industrial gas users on March 1, 1982, petitioned the Federal Energy Regulatory Commission for a rulemaking proceeding to investigate and establish rules to "mitigate market distortions under the Natural Gas Policy Act." They stated that:

> "The NGPA has within it the potential for even more substantial market disruptions in 1985. Most contracts for gas that that will be deregulated in 1985 contain definite or indefinite price escalator clauses. As result of these clauses, gas which is priced below market clearing levels today, including most Section 102 and 103 gas, will sharply increase in 1985 not merely up to, but far above, market clearing levels."

Finally, in written testimony submitted to this subcommittee on November 6, 1981, AGA recognized the problem caused by indefinite price escalator clauses:

> "An AGA study indicates that escalator clauses, if not legislatively defused, could result in severe economic effects. As a result of the activation of indefinite price escalator clauses alone - exclusive of other factors - a wealth transfer of 29 billion dollars in the year 1985 is expected to take place under the NGPA, because national average wellhead gas prices under the NGPA would rise by 51% in real terms from 1984 to 1985."

Senator **Nickles**. Thank you very much, Mr. Seder. Mr. Terrill?

STATEMENT OF J. T. TERRILL, PRESIDENT, LOUISIANA INTRASTATE GAS CORP., ON BEHALF OF THE COALITION OF INTRASTATE PIPELINES, ACCOMPANIED BY JAMES V. WALZEL, PRESIDENT, HOUSTON PIPE LINE CO.

Mr. **Terrill**. Thank you, Mr. Chairman. About one-third of the natural gas in this country is used in what we call the intrastate market. Some 24 States have an intrastate market, the larger ones being Texas, Louisiana, Oklahoma, California, Kansas, Colorado, and New Mexico. I am from Louisiana. Jim Walzel here to my right is from Texas. We are here to tell you that the intrastate market is in serious jeopardy under the Natural Gas Policy Act.

The interstate market is also in serious jeopardy, but there are certain discriminatory features in the Natural Gas Policy Act and the regulation of gas which causes us to fight for survival with at least one hand tied behind our back.

Believing that a third of the use of natural gas in this country is a matter of national concern, particularly when so much of the Nation is dependent upon the products of the agricultural, chemical, plastic, rubber, fiber, refining, and other basic industries who get their gas in the intrastate market, we wish to review with you some of these discriminations.

First, the federally set price ceilings now applicable to intrastate gas are equal to or greater than the corresponding price ceilings in the interstate market. This means that the true intrastate pipeline, a pipeline that is not owned or controlled by a producer, has now and will continue to have such a high average cost of gas as compared to the average of even, or even above average interstate pipeline that it is difficult to obtain and retain sufficient gas supplies to meet our customer need.

Second when our gas contracts expire, it is open season. Any other pipeline supplier, inter, intra, may raid our supplies. That is not true on the interstate pipelines. The Federal Government provides a regulatory protection against the loss of gas supplies upon expiration of some contracts.

In 1985 when price controls are removed on some gas, most of that gas that will be deregulated will be in the intrastate market, while vast quantities of interstate gas remain under permanent price controls.

The EIA projects that by 1987 the intrastate market will have over a $10 billion differential to overcome. The market disorder that is felt in the intrastate market will also be felt to a serious degree in the interstate market when the interstate pipelines' cushions of cheap gas, controlled gas, disappear. This is a national problem, but in all fairness, it hits the intrastate market first and hardest.

We would like to commend Senator Johnston for his bill, and respectfully suggest that the committee give it every serious consideration. Thank you.

Senator **Nickles**. Mr. Walzel, did you have any concluding remarks?

Mr. **Walzel**. Yes.

STATEMENT OF JAMES V. WALZEL, PRESIDENT, HOUSTON PIPE LINE CO., ON BEHALF OF THE COALITION OF INTRASTATE PIPELINES

Mr. **Walzel**. My name is Jim Walzel. I am president of the Houston Pipe Line Co. which is a Texas intrastate company, and I would just like to point out Texas represents about half of the total intrastate gas business in this country, and our company, Houston Pipe Line Co., is the biggest intrastate in Texas. I think that makes us the biggest intrastate in the country as far as I know, for what that is worth.

I would like to say one other thing about our size. We buy and sell in a single day about five or six times as much as Brooklyn Union Gas Co., which is a name that is probably familiar to you. Our company has been in business for 50 years, but until 1978, we never had any occasion to come to Washington on business. We have operated down in Texas under the rules and regulations of the Texas Railroad Commission, and while the Railroad Commission sets city gate rates for the protection of residential and commercial customers, we basically have had a free enterprise type of operation down in Texas all these years.

Now a lot of things changed with the passage of the Natural Gas Policy Act, and some of those changes created some unfair discrimination against the intrastates, and we documented those in our statement, and I would just want to say that I support those.

Our State energy agency down in Texas, TENREC, is preparing some studies that we want to submit to you later that is going to have some data on exactly what the numbers are quantifying some of the problems in Texas both as far as price and gas reserves.

I would just like to make a brief general observation that I believe very strongly to be correct. We believe that the basic conceptual fault of the Natural Gas Policy Act is in its trying to set a variety of prices for a single commodity. Much of the old gas is a fraction of the market price. We have got decontrolled gas in a variety of categories in between, and this has resulted in a lot of confusion in the development and in the sale of gas.

On the development side, we have got people drilling deep gas instead of shallow gas. We have got them drilling tight sands gas instead of easily produced gas. We have got them drilling expensive wildcat wells instead of development wells, and it is not a good situation.

On the sales end, it appears to me that gas is approaching its market clearing price in many markets all around the United States. In other words, it is getting up to just about the highest price the market will bear, and the consumers aren't getting the benefit of that cushion. Instead, it is going to subsidize deep gas, gas from coal, LNG, Mexican gas, Canadian gas, and all those sources that are priced at levels that are above what would be the market clearing price for gas.

Another thing that we need if we are going to have a national market in gas in addition to reducing the price controls is that we need to eliminate all the barriers we can that keep gas from flowing from where it originates to wherever the market is, and to do this in spite of classification as to what type of gas or what type of user.

Finally, I would just like to say based on a long experience of buying and selling gas in a relatively free market down in Texas, we are convinced the free market will work in natural gas just as it does in many other commodities, and we think that is the most efficient way for an industry to operate, and one that can't be improved upon by Government regulations.

A number of the bills that are being considered, including Senate bill 2074, propose a philosophy similar to what we believe in, and we support that bill, and we appreciate the willingness of those of you to take this subject up again because we know you didn't have a lot of fun when you worked on the gas legislation last time around. Thank you very much.

[The prepared statements of Mr. Terrill and Mr. Walzel follow:]

Testimony Of

J. L. TERRILL and JAMES V. WALZEL

On Behalf Of

THE COALITION OF INTRASTATE PIPELINES

HOUSTON PIPE LINE COMPANY
LOUISIANA INTRASTATE GAS CORPORATION
VALERO ENERGY CORPORATION
WARRIOR DRILLING & ENGINEERING CO., INC.
THE WILLIAMS COMPANIES

Thank you, Mr. Chairman. I am J. L. Terrill, President of Louisiana Intrastate Pipeline Corporation and with me is Mr. James V. Walzel, President of Houston Pipe Line Company.

We appreciate the opportunity to testify today on behalf of the Coalition of Intrastate Pipelines, an ad hoc group formed to represent the interests of some intrastate pipelines who along with other segments of the natural gas industry have been and will continue to be adversely affected by the current federal regulatory controls over natural gas. Market disorders and restriction of access to new supplies, such as offshore gas, have caused severe problems for our industry.

Although we are intrastate companies, we share some of the concerns of the interstate pipelines. As the EIA has demonstrated, there are wide disparities among the interstate pipelines' average price of gas. 1/ The pipelines with the higher average purchase cost are at a competitive disadvantage compared to the pipelines with the lower average costs. This disadvantage translates into concern about the ability to obtain and retain an adequate gas supply at reasonable prices for consumers.

We are concerned about our ability to compete for new gas supplies. However, unlike the interstate systems, our problems are made more severe by the discriminatory treatment imposed on us by the NGPA and other federal regulatory controls.

This is a recent phenomenon. When the Supreme Court in Phillips 2/ held that natural gas sold to interstate pipelines was subject to wellhead price controls and thus jurisdictional under the Natural Gas Act of 1938 (NGA), 3/ it left unregulated natural gas that stayed within state borders. The Natural Gas Policy Act of 1978 (NGPA) 4/ extended federal wellhead price controls to the intrastate market for the first time in history, while still protecting the interstate gas supply. The negative impacts of these policies are beginning to be felt in varying degrees throughout the intrastate market and are projected to increase.

According to the EIA, in 1978 7.5 quadrillion Btus of natural gas were produced and sold in the intrastate market. 5/ This was approximately one-third of the total national production. 6/

Regionally, the intrastate market breaks down as follows. There are 24 states with an intrastate market. Half of the total market is in Texas; one quarter is in Louisiana, about 13% is in Oklahoma; and most of the remaining market is in California, Kansas, Colorado and New Mexico. 7/

The intrastate market is served both by traditional pipeline companies and pipeline companies which are owned by major producers who basically produce the gas they transport and sell to direct sale customers. While 35% of the entire intrastate market is composed of such direct sales customers, who are generally large industrial users and electric utilities, direct sales account for 15% of the Oklahoma market, 30% of the Texas market, 51% of the Louisiana market and 100% of the California market. 8/ For historical reasons, the wellhead price paid by direct sales customers to producers in intrastate markets is on average one half of that paid to producers by intrastate pipelines. 9/

Several conclusions can be drawn from these breakdowns. First, including these direct sale prices in intrastate averages is misleading, in that it understates the competitive disadvantage facing intrastate pipelines. Second, just as there is tremendous variation among the states with respect to the interstate pipelines and their customers, so is there variation among the states with respect to the composition of their respective intrastate markets. Because of these differences, any analyses which purport to show averages may hide the truly diverse relative situations of consumers, whether dependent on intrastate supplies, interstate supplies or direct sales from the producer.

The health of the intrastate market is a national concern. Much of the industrial base of this country is located in the intrastate regions. This includes oil refining, petrochemical, metals, sulphur, paper, fertilizers, and agriculture, the products of which are essential to industries and jobs throughout this nation. Disruption of a competitive supply of natural gas will be felt in the automobile industry, the textile industry, the agricultural industry, the plastics industry, the rubber industry, and many, many more. 10/

NGPA TREATMENT OF THE INTRASTATE MARKET

The NGPA treats the intrastate market differently from the interstate market in three general respects: price ceilings, deregulation provisions, and access to supplies.

(1) Price Ceilings.

Sections 104, 105 and 106 of the NGPA 11/ set price ceilings for "old" gas. For gas committed or dedicated to interstate commerce, Section 104 sets the ceiling price at the price established by the Commission which was in effect on April 20, 1977, adjusted for inflation. 12/ (As of the effective date of the NGPA, those prices ranged from $.20 to $1.63/MMBtu.) 13/ For intrastate gas, however, under Section 105 the maximum lawful price is set by reference to the pricing terms of the contract in effect on November 9, 1978; by and large the Section 102 price is the cap and that price is the incentive price set for new wells. 14/ (As of the effective date of the NGPA, the Section 102 price was $2.07/MMBtu and now exceeds $3.00/MMBTU.) 15/ Section 106 generally allows a higher price for intrastate rollover contracts than for interstate contracts that roll over. 16/ Thus, the Act authorized different maximum lawful prices for flowing gas supplies between the interstate and intrastate markets, locking in a lower price for "old" interstate gas.

The result of this price treatment is that to the extent that the intrastate pipelines have a "cushion" of older cheaper gas to average with higher prices for new supplies, the ceiling price of gas comprising that cushion, by statute, is higher than the price of gas making up the interstate cushion.

(2) Deregulation Provisions.

The NGPA decontrols some gas on January 1, 1985, some gas on July 1, 1987 and leaves some gas under permanent price controls. 17/ Old interstate gas is never decontrolled; about 40% of old intrastate gas is decontrolled. 18/ Of the gas that is to be decontrolled on January 1, 1985, a disproportionate 59% will be decontrolled in the intrastate market which will bear this cost with only about 1/3 of total nationwide market. 19/ The EIA concludes that by 1985, "interstate purchasers [will] have over twice the amount under controls at a lower price than do the intrastate purchasers." 20/ After July 1987, with the decontrol of certain shallow Section 103 gas, the ratio of controlled interstate to intrastate production changes to over three to one in favor of the interstate market. 21/

(3) Access to Supplies.

Dedicated Gas.--Natural gas which is dedicated to interstate commerce pursuant to Section 1(b) of the Natural Gas Act 22/ required a certificate authorizing the transaction. 23/ The certificated service requires permission of the Commission before it may be terminated or abandoned. 24/ These requirements were modified and extended somewhat by the Natural Gas Policy Act. All gas dedicated to interstate commerce prior to November 8, 1978 and not exempted from NGA provisions by the NGPA, as high cost Section 107(c)(1)-(4) or new Section 102(c) or Section 103(c) gas, is still under NGA jurisdiction; 25/ this means such gas must forever remain dedicated to a particular interstate pipeline unless the Commission authorizes abandonment pursuant to Section 7(b) of the NGA. 26/

Some categories of gas under the Natural Gas Policy Act jurisdiction have a market restraint similar to abandonment in the bona fide offer/right of first refusal provision available only to interstate pipelines. 27/ This in effect provides that some gas cannot be switched to another pipeline, interstate or intrastate, if the current interstate pipeline purchaser exercises a right to continue purchasing the gas if it meets the terms offered by the other pipeline. 28/

The net effect of these two provisions is that as interstate contracts covering such gas expire, the supplies remain unavailable to new intrastate or interstate purchasers who may have much greater need for the gas. The Committee should know that all intrastate gas is available to the highest bidder--whether interstate or intrastate--once a contract expires.

Offshore Gas.--The NGPA did not alter the fact that all offshore gas in the federal domain moves in interstate commerce. 29/ This, in and of itself, presents no insurmountable problem, so long as it is recognized that all consumers in the United States should have equal access to supplies in the federal domain, not just some consumers. But this is not the case. The federal government restricts access to the federal offshore domain to consumers on the interstate pipelines and to certain select distribution companies. 30/ In 1980, 5.5 tcf of gas were produced from the Outer Continental Shelf 31/ (approximately 30% of total production) and none of this amount was available to intrastate pipeline purchasers.

Onshore Gas.--The NGPA under Section 311(b) provides for sales by intrastate pipelines to interstate pipelines and local distribution companies served by interstate pipelines on an expedited basis for periods of up to two years. 32/ There is no corollary provision allowing intrastate pipelines access to interstate supplies unless the pipeline agrees to become a "Hinshaw" pipeline. 33/ The effect of this provision has been significant.

The Office of Pipeline and Producer Regulation at the FERC reports that from March 1979 through October 31, 1981 a total of 54 Section 311(b) transactions have commenced. 34/

Furthermore, the NGPA objective of creating a "national" market for gas has not been fully achieved because of some uncertainties regarding the access of intrastate pipelines to supplies of gas onshore in other states. There should be no discriminatory barriers to intrastate pipelines' purchasing gas in other states and having that gas moved into the intrastate purchasers' systems by interstate pipelines.

In addition to statutory provisions, there have also been Commission implementation regulations which treat the two markets differently. 35/ The net effect of these provisions has been the creation of severe problems for intrastate markets, as will be described in the next section.

MARKET DISORDER UNDER THE NGPA

Many have testified before this Committee of the disruptive effects caused by the different price categories of gas and partial decontrol provisions of the NGPA. We would like to confirm those views and emphasize that not only do we have a problem competing against the interstate pipelines for new supplies. Because some pipelines do not have a cushion of cheap gas as do others, some are unable to outbid interstate pipelines for Section 107 gas, which in many cases is the only gas available.

The attached Table 1 from a recent Foster Associates report prepared for the Chemical Manufacturers Association, illustrates this problem. Please note that in Louisiana, the cost of purchased gas from three intrastate pipelines for July 1981 was, according to Foster Associates, substantially higher than the cost to nine interstate pipelines.

We are confident that if Foster Associates had included a Texaco affiliate, which makes large volumes of direct sales in Louisiana, they would have calculated a lower average price among Louisiana intrastate pipelines. Table 2 illustrates this point.

Because of the differences among the intrastate pipelines, between the interstate and intrastate pipelines, and among the interstate pipelines, the price for gas paid by the consumer can vary substantially. This can be illustrated by examining the prices paid by electric utility companies for natural gas as reported by the EIA for September 1981. 36/ Louisiana Power and Light paid $2.11/Mcf for gas in September 1981, compared to Central Louisiana Electric's price of $3.78/Mcf. In Texas, Gulf States Utilities paid $.33/Mcf compared with Central Power & Light's price of $3.53/Mcf. Note these prices include transportation costs.

Additional problems in the intrastate market are caused by direct sale customers, since, as their contracts expire, if they cannot continue their present arrangements, they will put additional pressure on the supplies of the intrastate pipelines. 37/ A manifestation of this problem is the current Texaco situation in Louisiana. The Texaco intrastate pipeline affiliate is apparently not going to renew some of its contracts, which means that someone must pick up their customers. The attached Exhibit 3, prepared by Louisiana Intrastate Gas Pipeline, projects the additional demand which will be created by Texaco's customers.

In the long run there are two potential outcomes of these pricing and supply trends: loss of load whereby industries switch to alternate fuels, or industry shut-downs. Indeed, partially as a result of lost demand and other economic factors, coupled with a mild winter in Louisiana, curtailments during this past winter were averted. It would be misleading, however, to rely on the absence of curtailments as signifying an adequate supply picture in the intrastate markets.

It is equally misleading to assume that the intrastate markets can be kept afloat through off-system sales by interstate pipelines. In the first place, off-system sales do not provide a secure source for long-term supplies, since in shortages such sales are required to be the first to be terminated. Secondly, the Commission's policy with respect to off-system sales is currently in flux, and there is no assurance that approval of such transactions will be forthcoming in the future. Finally, we do not know how much of the current off-system supply availability is a result of the recession.

Experts at the DOE, EIA and FERC, suggest that the situation of the intrastate market is likely to grow worse, particularly after NGPA decontrol in 1985. According to Robert Means, Director of the Office of Regulatory Analysis at the FERC, who has done a substantial amount of research on the intrastate situation, "on all assumptions, interstate pipelines have a significant bidding advantage after 1984." 38/

These views are supported by the Department of Energy's Office of Policy, Planning and Analysis which estimated that due to the different regional endowments of controlled gas, an estimated .9 tcf, which is about 5% of the total gas supply and 12% of the total intrastate supply, is projected to move from the intrastate to the interstate market between 1984 and 1985. 39/

The EIA estimates that in 1980 the interstate market had an advantage of $2.8 billion over the intrastate market in what they describe as the "controlled surfeit," which is the amount of gas production priced under the average market price. This advantage is projected to increase to $6.6 billion by 1985 (more than doubling in the 1984-1985 period) and to as high as $10.2 billion in 1987. 40/

CONCLUSION

We recognize that there can be no instant cure to the ills outlined herein. But we submit that if immediate steps were taken to eliminate the price disparities caused by the various categories of gas and the partial deregulation scheme of the NGPA, and if access limitations were removed to allow all purchasers the same opportunity to obtain new supplies of gas, then our long-term situation would be much improved. In the short-term, we suggest that any piecemeal provisions could be more detrimental than beneficial, particularly if Section 104 old interstate gas remains under its current low price ceilings and the intrastate market is denied access to new supplies.

We would like to take this opportunity to commend Senator Johnston for introducing his bill, S. 2074, whose principles we endorse. Similarly in the House we support the efforts of Congressman Gramm, whose revised bill H.R. 5866 introduced last week reflects many months of negotiation among the various segments of the industry. Congressman Collins also deserves credit for introducing a total deregulation bill last November, H.R. 4885. We urge this Committee to act on Senator Johnston's proposals as quickly as possible. We believe it is only through the principles he has introduced that we can achieve a fair and efficient natural gas market.

FOOTNOTES

1/ Department of Energy, Energy Information Administration, An Analysis of the Natural Gas Policy Act and Several Alternatives, Part I, The Current State of the Natural Gas Market, p. 66 (December 1981) [hereinafter cited as EIA, Current Market].

2/ Phillips Petroleum Co. v. Wisconsin, 347 U.S. 672 (1954).

3/ 15 U.S.C. § 717 (1976).

4/ 15 U.S.C. §§ 3301-3432 (1975-1980 Supp.).

5/ Department of Energy, Energy Information Administration, Monthly Energy Review vi (January 1982).

6/ Id. at 50.

7/ Id. at vii.

8/ Id.

9/ Id. at vi.

10/ For example, a report prepared for the Petrochemical Energy Group documents the impact of petrochemicals on the nation as a whole. Shipments of petrochemicals and petrochemical dependent manufacturing industries account for 32% of total manufacturing shipments in 1980. Arthur D. Little, Inc., 1980 Petrochemical Industry Profile 30 (August 1, 1981).

11/ 15 U.S.C. §§ 3314-16.

12/ 15 U.S.C. § 3314(b).

13/ 18 C.F.R. § 271.101 (1980).

14/ 15 U.S.C. § 3315(b).

15/ 18 C.F.R. § 271.101 (1980).

16/ 15 U.S.C. § 3316.

17/ 15 U.S.C. § 3331.

18/ EIA, Current Market, at 48.

19/ Id. The amount of Section 105 gas which will be decontrolled is subject to some question depending on how one interprets the limitation on indefinite price escalators, Section 121(e) of the NGPA. 15 U.S.C. 3331(e).

20/ EIA, Current Market, at 48.

21/ Id.

22/ 15 U.S.C. § 717(b).

23/ 15 U.S.C. § 717f(c).

24/ 15 U.S.C. § 717f(b).

25/ 15 U.S.C. § 3431(a)(1)(B).

26/ 15 U.S.C. § 717f(b).

27/ 15 U.S.C. § 3375(b).

28/ See Order No. 95, Bona Fide Offers; Right of First Refusal, Docket No. RM80-8, (issued July 28, 1980).

29/ Under Section 7(c) of the NGA, an interstate pipeline must obtain authorization from the Commission before it may commence transportation of gas on behalf of another entity. 15 U.S.C. § 717f(c). The movement of natural gas from the OCS to an adjacent state requires that the gas cross the boundary between the OCS and the state's territorial waters. For purposes of the NGA, this boundary constitutes a state line, and transportation of OCS gas to an adjacent state is transportation in interstate commerce subject to the Commission's jurisdiction. Continental Oil Co. v. FPC, 370 F.2d 57, 66 (5th Cir. 1966), cert. denied 388 U.S. 910 (1967).

It is important to note that although the NGPA defines OCS gas as "committed or dedicated," (15 U.S.C. §3301(18)(A)(i)) that definition is "used solely for the purpose of the pricing and other provisions" of the NGPA. H.R. Rep. No. 95-1752, 95th Cong., 2d Sess. at 72 (Oct. 10, 1978). The definition "does not create new freestanding obligations or expand the jurisdiction of the Commission under the Natural Gas Act." Id. The NGPA definition serves only to ensure that the Commission retains its full NGA jurisdiction over existing OCS leases, and does not in itself dedicate all offshore gas to interstate pipelines. Tenneco Exploration, Ltd. v. FERC, 649 F.2d 376, 378-82 (5th Cir. 1981). Offshore gas is not dedicated, for NGA purposes, until deliveries to an interstate pipeline actually begin. Falcon Petroleum v. FERC, 642 F.2d 780, 784 (5th Cir. 1981); Conoco, Inc. v. FERC, 622 F.2d 796, 797 (5th Cir. 1980). The Commission has acknowledged that the NGPA does not expand its NGA jurisdiction over OCS gas. See Continental Oil Co., Docket No. CI79-415, "Order Denying Rehearing" (Sept. 14, 1979).

30/ See e.g., on March 20, 1978, in Opinion No. 10, the FERC announced that as a matter of policy it would refuse to allow producers to "reserve" offshore gas for use in their own facilities, such as oil refineries, or for direct sales to other potential purchasers, such as intrastate pipelines and industrial customers. In effect, Opinion No. 10 ensured that all natural gas produced from the Outer Continental Shelf would be sold to interstate pipelines. Opinion No. 10, Tenneco Oil Co., Docket No. CI75-45 (Mar. 20, 1978), aff'd on reh'g, Opinion No. 10-A, Tenneco Oil Co., Docket No. CI75-45 (June 21, 1978); reversed and remanded, Air Products and Chemicals, 650 F.2d 687 (5 Cir. 1981). The matter is now before the FERC on remand from the 5th Circuit. See "Order Granting Motions in Part on Remand from the Court of Appeals, Supplementing Opinion Nos. 10 and 10-A, and Issuing Notice Providing for Comments and Reports," Tenneco Oil Co., Docket No. CI75-45 (Feb. 10, 1982).

31/ EIA, Current Market, at 38.

32/ 15 U.S.C. 3371(b).

33/ A "Hinshaw" pipeline is a pipeline that has engaged in a sale or transportation in interstate commerce, but is exempt from NGA jurisdiction so long as the gas received is consumed totally within the state and the transaction is subject to state regulation. 15 U.S.C. § 717(c). The FERC has classified a Hinshaw pipeline as a "local distribution company" for certain purposes. Order No. 63, Docket No. RM79-24 (January 3, 1980). Thus, a Hinshaw pipeline could purchase gas pursuant to Section 311(b) if it can be established that such pipeline is a local distribution company served by an interstate pipeline.

34/ Office of Pipeline and Producer Regulation, Staff Report on Part 157 and Part 284, Self-Implementing Transactions Which Commenced From December 1, 1978, Through October 31, 1981.

35/ For example, in Order No. 107, Docket No. RM80-50, (issued November 13, 1980) the Commission provided a final rule on production enhancement which provides for a higher price (the lesser of the Section 109 price or the renegotiated contract price) for intrastate gas under existing or successor contracts that would not be produced but for the incentive provided by this higher price. The Order was challenged and on January 12, 1981 the FERC granted rehearing for further consideration.

36/ Department of Energy, Energy Information Administration, Cost and Quality of Fuels for Electric Utility Plants, Table 33, at 58-61 (September 1981).

37/ Means, Analysis of the Bidding Disparity Between Interstate and Intrastate Pipelines 32, (March 10, 1982) [revised 3/12/82].

38/ Id. at 25.

39/ Department of Energy, Office of Policy Planning and Analysis, A Study of Alternatives to the Natural Gas Policy Act of 1978, at 10 (November 1981).

40/ EIA, Current Market, at 50.

Table 1

COMPARISON OF JULY 1981 AVERAGE PURCHASED GAS COSTS OF SELECTED PIPELINE COMPANIES PURCHASING GAS IN LOUISIANA

($/MMBtu)

Intrastate	
Sugar Bowl	$3.92
LIG	3.43
Monterey	2.58
Average	$3.31
Interstate	
Columbia	2.30
Consolidated	2.50
Michigan Wisconsin	2.34
Natural Gas Pipeline	1.90
Southern Natural	2.62
Texas Eastern	2.34
Transco	2.78
Trunkline	2.29
United	2.34
Average	$2.38

Source: Report prepared by Foster Associates, Inc., "A Comparison and Appraisal of Ten Natural Gas Deregulation Studies", prepared for the Chemical Manufacturers Association, February 16, 1982.

Table 2

Louisiana Producer Selling Price (1980)

Excluding Texaco, Inc.

Intrastate		Interstate		Total	
Volume BCF	Avg. Price $/MCF	Volume BCF	Avg. Price $/MCF	Volume BCF	Avg. Price $/MCF
590	$2.48	1,184	$1.74	1,774	$1.99

Including Texaco, Inc.

Intrastate		Interstate		Total	
Volume BCF	Avg. Price $/MCF	Volume BCF	Avg. Price $/MCF	Volume BCF	Avg. Price $/MCF
988	$1.66	1,184	$1.74	2,172	$1.70

a/ Total Estimated Gas Produced in Louisiana for 1980	2,708 BCF
Total Gas Accounted for during 1980	2,172 BCF

Therefore, 80% of the gas produced and sold has been accounted for.

LAH

a/ All gas is net production — volumes do not include gas returned to earth from cycling and/or gasoline plants or injection projects.

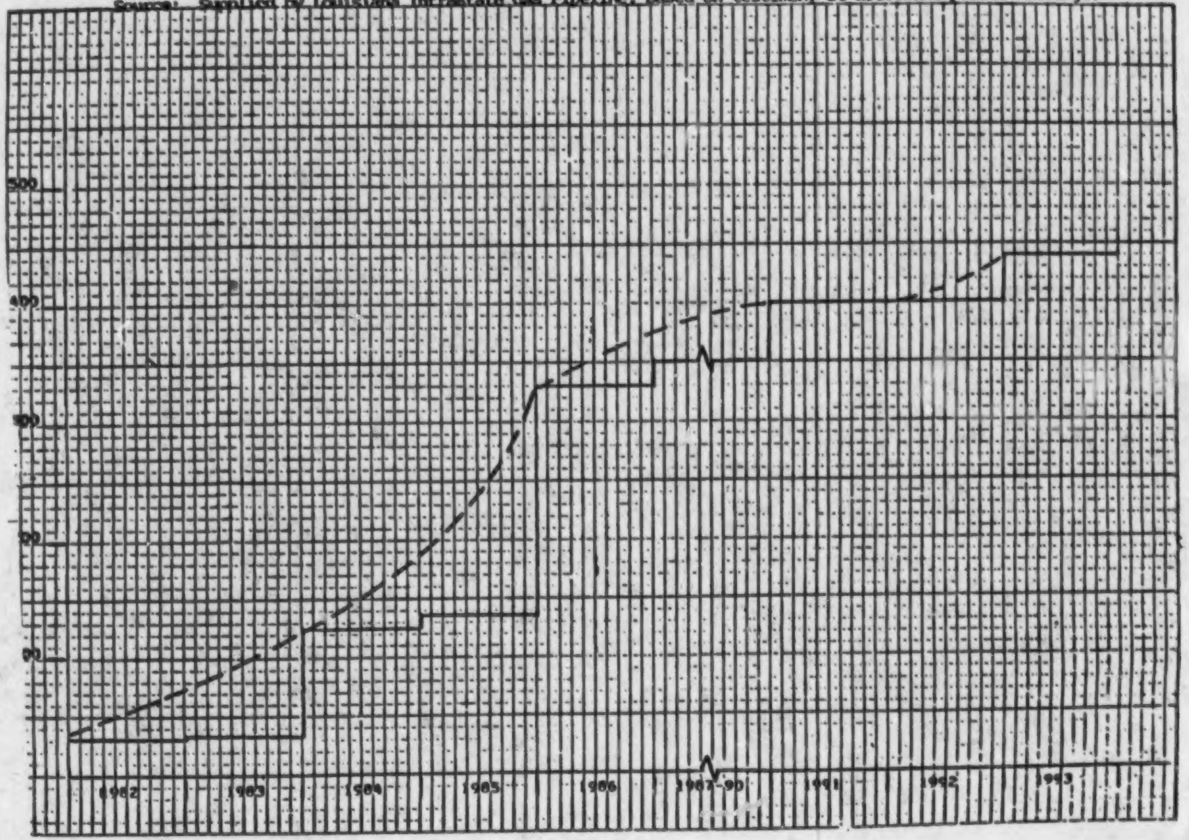
Source: Louisiana Conservation Commission

Exhibit 3

Projected Expiration of Texaco Intrastate Pipeline (Louisiana) Contracts ——————

Projected Additional Demand on Other Louisiana Intrastate Pipelines – – – – – –

Source: Supplied by Louisiana Intrastate Gas Pipeline, based on testimony at Louisiana public hearings.



Senator NICKLES. Thank you, Mr. Walzel. Our committee and everyone is operating on the 5-minute rule, and as many people as we have, we will probably just take different turns at picking out people and asking some questions, and I will start, Mr. Conklin, and ask you a couple of questions.

You mentioned that no other commodity has price controls and Government controls and allocation, or not an allocation scheme, but a price control as such. Is that correct?

Mr. CONKLIN. Yes; that is correct. That is what I said.

Senator NICKLES. There is no other industry? We have had Government controls over a lot. Is there any other commodity where the Federal Government sets the prices and there are 20 some odd different price categories under NGPA?

Mr. CONKLIN. No, sir.

Senator NICKLES. You mentioned it but I hadn't researched it, but I was thinking that might have been the case.

Mr. CONKLIN. That is correct. We are the last kid on the block.

Senator NICKLES. Some of us are trying to change that. You showed a chart that showed the prices of oil going up substantially, and then the price of gas going up much less, increasing, but much less, and then you showed right below that if I remember a chart that showed the number of oil well completions up considerably, and the number of gas well completions somewhat up, but not up near the same.

Mr. CONKLIN. They were up some, but actually since late 1979 through 1980, through 1981, it just had a slight increase, Senator.

Senator NICKLES. So for the most part you represent I guess a number of independent producers?

Mr. CONKLIN. Yes; we do—8,000.

Senator NICKLES. Of the wildcatting, exploratory type, that is about what percent of the production of new finds?

Mr. CONKLIN. About 85 to 90.

Senator NICKLES. Then from this chart as far as completions, it looks like most of the last couple, 3 years, the effort has been primarily directed in oil, in an area where everyone knew that we were moving into deregulation.

Mr. CONKLIN. That is correct.

Senator NICKLES. OK, and you represent people that go after gas and go after oil?

Mr. CONKLIN. That is correct.

Senator NICKLES. Mr. Taliaferro, a quick question—we heard Mr. Walzel and I think Mr. Wright kind of mention that they felt like to some degree that the old gas is subsidizing the new, deep gas at below 15,000 feet which you are actively involved in, and many others I guess that you are representing today from the Anadarko Basin.

What do you say in response to that charge?

Mr. TALIAFERRO. It's true, Senator, but my company and those in the group that I represent are not involved in the search, in the exploration and development for gas below 15,000 feet.

We are involved in the search for new gas where those vast reserves are to be found, and those are in tight formations, at whatever level, whatever depth, and essentially below 10,000 feet where no crude oil is to be found, so this is a methane exploration industry. In order that the venture capital necessary to find the reserves where the gas is, not where it might be more convenient to find it, but where the vast new reserves lie, the Congress worked out a system for price averaging to permit the venture capital to flow to this effort to establish the reliable deliverability of these new reserves without the consumer at the burner tip having to bear the full cost of that surge.

They did that by retaining controls on the old flowing gas found largely in association with the search for crude oil, and at a price and under a set of economics satisfactory for the development of that old gas supply. It was a compromise, Senator.

Senator NICKLES. My time is up, so Senator Johnston?

Senator JOHNSTON. Thank you, Mr. Chairman. Mr. Lawrence, you say there is a surplus of natural gas, but the figures from EIA indicate that discoveries last year were 14.47 tcf which was only 77 percent of the 1980 consumption, and even when you use the revisions in past reserves of 1.049 tcf, you end up with the fact that we didn't replace as much as we used last year, so we do need more incentive than we have under the present law, don't we?

Mr. LAWRENCE. We do, Senator, but the incentives are in place and working.

Senator JOHNSTON. They are working?

Mr. LAWRENCE. Sure, they're working.

Senator JOHNSTON. To replace what we are using are they?

Mr. LAWRENCE. We are talking about of the exploratory wells, 14 percent of the gas wells were completed as producers. Only 6 percent of the oil exploratory wells were completed as producers. The gas well production on a Btu basis is three times that of oil, so this tilt toward oil drilling has I think been overdramatized.

Now we were for many years replacing only about half of the reserves that we were producing, and in 1979 we went up to about three quarters. That is the AGA figures. We have little confidence in that. The EIA in the first year, for 1980, showed that going up to about 90 percent of the replacement. I haven't seen any figures for 1981.

Senator JOHNSTON. The trim line is getting better, but we are still short?

Mr. LAWRENCE. You're right.

Senator JOHNSTON. Mr. Taliaferro, you point out the incentive of below 15,000 feet, and I was particularly proud that I had something to do with that provision in the NGPA. But one thing we did was that we said below 15,000 feet you are deregulated. Above 15,000 feet, you get the No. 2 price. We thought those were going to be closer together than they are, but the fact of the matter is now that the No. 2 price is less than half of the 107 price.

Now, the cost differential between drilling below 15,000 feet and drilling right above 15,000 feet wouldn't support that kind of price differential, would it?

Mr. TALIAFERRO. No, sir.

Senator JOHNSTON. As a matter of fact, our figures indicate that the average well between 12,500 feet and 15,000 feet was $3,426,000 while 15,000 to 17,500 is $3,750,000. So we have in effect a price differential built into the NGPA. This is reflected in the market where we have unrealistically high prices below that magic mark of 15,000 and unrealistically low prices immediately above the 15,000, say between 10 and 15, isn't that correct?

Mr. **Taliaferro**. Let me answer in this way. You also provided in the NGPA and specifically called attention to it in the conference committee's report a mechanism by which the FERC can provide an incentive price for the intermediate levels, and you specifically suggested they take a look at that which under the intermediate depth rulemaking now underway in the FERC they are doing, and incidentally, the Independent Gas Producers Committee has presented written comments and certainly will comment orally in that rulemaking in favor of incentive prices at the intermediate depths where again the targets are vast quantities of new gas supplies.

Now, I certainly do not argue that the pricing mechanisms in the NGPA are perfect, and that is true of the 102 and 103 prices, Senator. My point is that, my essential point is that as an interim transition mechanism, the act is working well to establish the new reserves in such abundance that they will be, adequacy of supply will be the ultimate pricing mechanism.

Senator **Johnston**. My time is running out. You and I are in agreement that the prices do need to be adjusted. The question is how.

Now, Mr. Lawrence, you heard Mr. Terrill testify about the great problem we are facing in the intrastate market where there is a price differential right now, average acquisition price. I don't know whether he said it, but it is a difference of at least a dollar an Mcf between the intrastate and interstate average acquisition cost. Isn't that figure correct?

Mr. **Terrill**. Yes, sir.

Senator **Johnston**. Now that price differential between the acquisition cost in intra and interstate is not going to come together. It is going to get broader. You are going to have, according to Mr. Terrill, I think he said $10 billion differential between the inter and intras by 1987.

How do you propose that that problem be dealt with, that is, the problem of all these industries in the intrastate States that won't be competitive under that price arrangement? What do you propose to do about those?

Mr. **Lawrence**. I mentioned the reverse 311(b) for the greater flexibility and the greater access, equal footing access to the offshore, but I guess I would like to discuss this more. Mr. Terrill and Mr. Walzel are an AGA member company and Houston Pipeline Co. is a very major AGA member. We don't have that. We don't see that dollar disparity between inter and intra. Our information shows $1.56 for the inter versus $1.73 or four for the intrastate, a much lesser margin. I think as you get in the outyears that gap rather than closing, I mean rather than widening, could well close as the interstate systems are the ones that are getting involved in the high-cost supplemental supplies such as Mr. Seder's company, Great Plains, coal gasification project which are admittedly higher than conventional sources of gas, but are excellent alternatives to import oil or electricity in our energy mix.

Senator **Johnston**. Let me get Mr. Terrill to reply to that because I think there is a difference between the two.

Mr. TERRILL. There definitely is a difference, and when you look at averages any time, you know, they get distorted because no one is average, but there is a very distinct difference in intrastate markets that need to be shown here, and I alluded to it in my opening remarks, and that is those sales of gas that are termed direct sales by producers or producer-owned pipelines, and they are a substantial part of the marketplace in both Texas and Louisiana, and consequently they distort the picture, the true competitive picture that exists between intrastate pipelines who are expanding and who are attempting in fact to fill the gap that these direct-sale pipelines or direct-sale producers are creating because they are withdrawing from the sales of new gas, so it is distorted, particularly in Louisiana, and I would mention Texaco is a large producer of gas in Louisiana who makes direct industrial sales in Louisiana. When you look at the averages of Louisiana, they are distorted because of that large marketplace they take.

Senator JOHNSTON. I wish we could follow up more, but my time is up. I think what this showed, Mr. Chairman, is we are going to need some more hearings.

Senator NICKLES. That could well be. Senator Ford?

Senator FORD. I thank the Chairman. Very quickly, to try and get through some of this in 5 minutes—we may want to come back, Mr. Chairman. Mr. Conklin, you emphasized several graphs in your statement, and one was on the gas and oil well completions, and you show how the oil well drilling accelerated compared to the natural gas drilling, and you said that was because of the deregulation.

Tell me, Mr. Conklin, how many of those oil wells were infill drilled?

Mr. CONKLIN. I cannot answer that.

Senator FORD. Why not?

Mr. CONKLIN. I did not think it was important.

Senator FORD. It certainly is important when you find the field and the prices go up and you go back and start drilling infill where you know you are going to get the resource. You are not searching for new sources of energy, and I would like for you to give me the information as it relates to that percentage of infill drilling.

Mr. CONKLIN. Yes, sir.

Senator FORD. Let me ask another question here if I may. Mr. Seder, we have heard a lot about the contracts problem. I think you alluded to that in your statement. The FPC outlawed certain types of contract clauses in the Natural Gas Act.

Have you had your lawyers look at whether FERC has the authority to solve the contracts problem or not administratively?

Mr. SEDER. No; we haven't, Senator, but since there is nothing in the NGPA to prohibit contracts of this kind, it would seem unlikely to me that there would be any legal reason why those contracts would not be enforcible.

Senator FORD. So, we are getting back to: this is not too bad a bill the way it is. It has been working some, and there may be some administrative procedures which we could use to eliminate some of the problems that we see without going through the traumatic experience of trying to early deregulate and all those good things.

Mr. **Seder**. My answer was to the contrary. I don't think that it can be done administratively.

Senator **Ford**. You didn't take any authority away from them, though, in the NGPA.

Mr. **Seder**. Well, after 1985 there will be no further regulation. It seems unlikely to me that FERC would have jurisdiction after 1985 when they have no jurisdiction over such contracts at all, to enforce or to prohibit certain clauses. At the time you speak of, the FERC did have jurisdiction over the contracts.

Senator **Ford**. Mr. Conklin, you talked about the reduction of imports and increase to the glut on the market and the prices coming down.

What if industry was at 95 percent production instead of the present-day 70 percent production? How well would we be as it relates to imports?

Mr. **Conklin**. I would hope that at that point, Senator, that we as a gas industry would be able to back out more of the imported oil.

Senator **Ford**. Well, but if we were today producing 95 percent to that 60 percent industrial complex, would we need about 30 percent more energy than we are using today, and isn't that producing the glut that indicates that deregulation is working well?

Mr. **Conklin**. Part of it is.

Senator **Ford**. At least I am partly right. Let me get down to Mr. Terrill and Mr. Walzel. Let me just get back to a point here that bothers me.

The reason we passed this piece of legislation is because the rest of the States and the rest of the country couldn't get any gas. The Midwest couldn't get any gas. You had it in your States and the Governors were saying we are going to put the National Guard on the border if anybody comes down and tries to get any of our gas, and so the Congress had to do something to get the gas into the Midwest, into Ohio with 200,000 people out of work in a harsh winter because they didn't have the natural gas, didn't have the flow.

This winter we heard indications here was one of the worst winters we have had, and yet nobody was put out of work because of lack of natural gas, so somewhere along the way this piece is beginning to work, and intrastate, letting the rest of the country have some of that gas, caused us to pass this particular legislation.

Senator **Johnston**. We didn't say you couldn't have it, just under the pricing mechanism you wouldn't pay the price.

Senator **Ford**. We went to the price and the highest price in the country was intrastate. We went from interstate to intrastate prices. Isn't that correct?

Senator **Johnston**. What I am saying is the intrastates, States like Louisiana, it wasn't that we didn't want to sell you the gas. We weren't unwilling to sell.

Senator **Ford**. Now wait a minute. I have heard too many harsh statements saying we have got it, it is ours, we are going to keep it, and we went into offshore. I will give you some quotes, get it right out of my book pretty quick, but I think the competition on offshore drilling will compensate.

Now, I tried the last time we had a hearing, Mr. Terrill, a fellow from Louisiana, and Mr. Walzel, I want you to help, you said you were going to have a study. I have some questions there that I haven't got an answer on yet. Maybe you two fine gentlemen can give those answers to me.

We sought some basic information that time about intrastate pipelines. Unfortunately, the witnesses haven't provided that yet. Let me ask the same question to you. Maybe you don't want to answer them today.

Mr. TERRILL. It is in our prepared testimony.

Senator FORD. All my questions?

Mr. TERRILL. I don't know what all the questions are.

Senator FORD. I thought maybe you were pretty good. I forgot to take that course in school as to mindreading.

How many intrastate pipelines are there in the country?

Mr. TERRILL. Number of intrastate pipelines, that is not addressed as such. We do not have that.

Senator FORD. Can you get me that information?

Mr. TERRILL. Certainly.

Senator FORD. Good. That's the same answer I got last time.

Which of those pipelines are members of your coalition that you know? My 5 minutes are up, but I am going to ask two more questions.

Do you have any coalition you are representing here today?

Mr. TERRILL. Yes, sir, they are noted on the front of our presentation.

Senator FORD. How many of the intrastate pipelines are members of your two groups?

Mr. TERRILL. About five; there are five here represented on this testimony.

Senator FORD. OK.

Mr. TERRILL. Which represent a substantial part of the marketplace, by the way.

Senator FORD. It is a substantial part of the marketplace?

Mr. TERRILL. Yes, sir.

Senator FORD. Would you please indicate what is the present level of curtailments for intrastate pipelines in each State, pipeline to pipeline, indicating what types of customers are curtailed and how much they are curtailed?

Mr. TERRILL. Let me respond to that if I may verbally now, and we will give you specifics.

Senator FORD. Are you studying just Texas?

Mr. WALZEL. Just Texas.

Mr. TERRILL. Let me tell you about Louisiana because I think the hearings that preceded this, it was raised in the context of Louisiana curtailments.

The situation that existed in the second and beginning of the third quarter of 1981 led the intrastate pipelines or some of them in Louisiana to project the 1981–82 winter to have deficiencies, and it was predicated on the economy at the time. The state of the economy, particularly in Louisiana, was very good and very high. We had extraordinarily high demand on pipeline systems into the fourth quarter of 1981. We were preparing for a severe winter. You always prepare for the worst and hope for the best.

Senator Ford. Did Louisiana ever have a severe winter?

Mr. Terrill. Yes, sir, we had quite a bit of ice even this past winter.

Senator Johnston. It went down to 5° in Shreveport.

Senator Ford. I guess we sold a lot of whisky down there!

Mr. Terrill. Let me continue. We were preparing for the worst, as a prudent operator ought to do. We knew we were going to be deficient if we had this kind of demand on our systems during the winter months. We were reaching out beyond the borders of Louisiana to acquire those gas supplies. We were squeezed out of purchasing gas within our own border even though it worked. It was available. There is no shortage of gas supply within Louisiana to meet Louisiana requirements. It is principally, though, 107 deep, and priced beyond our ability to market within our borders, and it has created the kind of market disorder problems that we have, so we reached beyond our borders under the principles of the Natural Gas Policy Act to acquire gas supplies, and they were rather substantial volumes that were being acquired in anticipation of the economy continuing at its pace that it was at, and the winter that was faced.

None of that happened. We had the severe winter, but we had a turndown in the economy late in the fourth quarter. It deepened in 1982, and the consequence of that is there are no curtailments in Louisiana at the present time.

Senator Ford. So, the same question I asked Mr. Conklin about the economy and the turndown in the economy—it looks like deregulation is working. The turndown in the economy kind of saves you based on what you are arguing about here.

Mr. Terrill. It certainly masks the true situation.

Senator Ford. I am going to ask one more question. Then I am going to quit.

What is the projected level of curtailments for the identified pipelines and customers for the next 5 years? You have to make the judgment, the same as you did for this winter.

Mr. Terrill. I can tell you there are studies underway in both Louisiana and Texas. I am not sure what other States.

Senator Ford. Let's get your two States, say the largest ones, or the largest percentage of them.

Mr. Terrill. Yes, sir.

Mr. Walzel. I need to tell you we think the Natural Gas Policy Act was a constructive piece of legislation. It dealt with the problem you described, interstate pipelines being stymied by 25 or 27 years of regulation, and did a good job of correcting a lot of serious problems.

What we are here advocating is to tune it up a little bit. It overreacted to moving gas out of the intra into the inter. It did a good job of that, but now there is some discrimination built in that we would like to see corrected, but that is not at all to say that we don't——

Senator Ford. You do understand the original problem?

Mr. Walzel. Yes.

Senator Ford. Thank you, Mr. Chairman.

Senator Nickles. Senator Tsongas?

Senator TSONGAS. Mr. Chairman, you asked the question about whether there was any comparable regulation. I am not sure there is, but as I look down the road here, I wonder what would happen if we deregulated completely such matters, whether it is tobacco, sugar beets, and wheat?

Senator FORD. You start mettling now, Senator!

Senator TSONGAS. That was the kind of response I was trying to elicit.

Senator FORD. Let me just say to you, the end of this year tobacco will be at no cost to the Federal Government, and you can't say that about nuclear.

Senator TSONGAS. Do you care to make a statement about sugar beets?

Senator JOHNSTON. I think sugar beets ought to be deregulated. Don't fool with the cane, though!

Senator TSONGAS. Would you care to speak for soybeans, barley, and wheat?

Senator BUMPERS. I would. May I be heard on soybeans and rice?

Senator TSONGAS. I think I made my point, and I appreciate my colleagues making the other point.

I come from a State in which all our industry, fishing, high tech and textiles, are completely without market intervention, and you ought to try it some time. You might enjoy it.

Let me say that from a theoretical and philosophical point of view I think there is a strong argument for deregulation, the same argument that was there for decontrol, and I happen to have supported that.

I also supported I think Senator Johnston's end use amendment last year, and I voted for the Natural Gas Policy Act. I think I was the only member of the delegation to do that as well, but the point to be made, even though we can argue these things, and I think you make some very valid points, and I think in the normal situation that the Congress would move in that direction, what is missing in the discussion here is this issue—not by itself. It is not being addressed by itself, but this issue in the total environment. What is it that causes President Reagan, for example, who ran on the issue of deregulation, to reverse himself? It is not what the Congress is saying on the issue before making up his mind, but it exists within a situation, but I think you ought to at some point at least sit back and spend a few moments contemplating what I think is an unfortunate lack of an overall energy policy that clearly does address each particular component in part.

I think if indeed that existed, I think deregulation would not be an emotional issue or a political issue, and I think you could address it on the kind of very mechanical, technical, and in many cases meritorious arguments that you make, but that is not how this issue is going to be addressed. It is not how it is going to be decided, and I would hope that we would go on to a viable, comprehensive energy policy in which these kinds of things can be addressed simply, without emotion, without the diatribe, and let the marketplace prevail because I think decontrol of oil has worked very well, very well indeed, and I think those who voted for it I think can do so with some pride.

I think the same situation would obtain in this case were there a less poisoned environment because the sense of the total package is not there, and I know that seems somewhat irrelevant, but in fact that is how this issue is going to be decided, and those of you who have an interest in this I think have a great interest in the other part of energy policy being addressed as well.

In the remaining time, I know that the gentlemen from the intrastate market were cut off, if you would care to use the balance of my time to address the issue that Senator Johnston raised, you can use whatever is left of my time.

Mr. **Terrill**. I would simply point out further to the problem that exists in Louisiana today that the EIA members that you saw yesterday demonstrating reserves by States, that the intrastate market since 1976 through 1980 has lost about 13 percent of the reserves they had during that period of time, and as you say, Senator Ford, that demonstrates that the NGPA in part is working as it was intended, to disperse more the reserves to those who had the need.

The problem is that it is a growing problem where we cannot meet our customer requirements in the very short period of time.

Mr. **Walzel**. I just have one comment I would like to add in response to what Bud Lawrence said. Our numbers in Texas indicate that there is an 80 cent an Mcf difference between the average purchase price of the interstate in Texas versus the intras. In other words, they have an 87 cent average cushion or advantage in bidding against us for new gas supply.

The other thing, while we are a member in good standing of the AGA, I think I ought to say on this particular issue we would want to divorce ourselves from AGA's general stance on this and go our own way.

Senator **Nickles**. Thank you, gentlemen. Senator East, do you have any questions?

Senator **East**. No.

Senator **Nickles**. Senator Bumpers?

Senator **Bumpers**. Mr. Lawrence, let me ask you this. Somebody may have already asked you this. How much of the current surplus of oil or gas or both would you say is due to the recession?

Mr. **Lawrence**. I don't think I could qualify that, but some significant amount.

Senator **Bumpers**. How much of our oil consumed in this country daily goes to industry? Do you know the answer to that?

Mr. **Lawrence**. I can tell you the gas.

Senator **Bumpers**. How much?

Mr. **Lawrence**. It is about half of our through-put of our interstate volume, through-put that goes through our interstate pipeline and distribution systems, about 8½ trillion cubic feet.

Senator **Bumpers**. Out of a total consumption of roughly 18 to 20 trillion?

Mr. **Lawrence**. Yes.

Senator **Bumpers**. So it is about 40 percent, between 40 and 45 percent of our gas is used by industry?

Mr. **Lawrence**. It is about 50 percent of the regulated amount and the unregulated amount would be that which Mr. Walzel and

Mr. Terrill have been referring to, the direct pipeline sales intrastate.

Senator **Bumpers**. How is the demand, how is the demand for natural gas right now in this country? Is it slow or is it fairly firm?

Mr. **Lawrence**. I have just been told it is about 4½ million barrels a day, stationery uses in the industry.

Senator **Bumpers**. Of oil?

Mr. **Lawrence**. Of oil.

Senator **Bumpers**. Roughly 8 trillion cubic feet of gas?

Mr. **Lawrence**. Which is about the same, it is about that equivalent volume of gas for oil. On the demand, Senator, basically we are going to be publishing a very comprehensive 1½ year demand study that will be out within the next month, and it is going to have different ranges, but in the residential market I think there will be a high and a low, but essentially it will be flat where conservation will be offsetting new hookups.

In the commercial market we see an increase and potential for substantial increase especially if we get into some of the new nontraditional markets, cogeneration, select use of gas for natural gas fueled vehicles, but if we can get rid of the market restraint shackles on industrial gas use, we see a very significant potential doubling in industrial gas use.

Senator **Bumpers**. If that happens in this economy—Senator Ford touched on this—if we saw the economy, the industrial capacity of this country utilized at 90-95 percent instead of the current 70, 71 percent in February, there would be a very significant increase in the demand for both oil and gas, would there not? We all know that one of the reasons for the lax demand right now is because of recession. We can all agree on that, can't we?

Mr. **Lawrence**. Yes, sir.

Senator **Bumpers**. Now is there any indication right now, do you know of anybody that has cut the price of gas in the last 6 months?

Mr. **Lawrence**. I think in meeting some of the industrial markets, particularly with the reduced prices of resid, bearing in mind that our companies do have to operate under regulatory tariffs, but I think they have certainly felt the pinch and may be seeking some reduced price.

Senator **Bumpers**. Some of these things are contractual and it is not easy for the end users to get out of a contract. You have got the take or pay contracts, and you have got some of the most favored nations clauses which I think FERC ought to get into, but Mr. Taliaferro, let me ask you this. What are you selling deep gas for that you discover today? What would you expect to get for it?

Mr. **Taliaferro**. About $8.10.

Senator **Bumpers**. What was it a year ago?

Mr. **Taliaferro**. About the same; we are seeing some softening of that, Senator, and expect to see more.

Senator **Bumpers**. Yesterday Chairman Butler testified that about 4 percent of our natural gas supplies are from deep zones, 15,000 feet and below. Do you think that is about right?

Mr. **Taliaferro**. No, sir, I don't think that is right. With respect to present deliverability he is right.

Senator **Bumpers**. I don't want to misquote him. That may be what he was talking about.

Mr. TALIAFERRO. With respect to the new gas resource base, it is much greater than that, and indeed 70 percent of our remaining supplies of natural gas onshore, Lower 48, are in tight formations and below 10,000 feet.

Senator BUMPERS. Does USGS agree with that?

Mr. TALIAFERRO. Yes, sir. I believe they do now, and those are figures, I am primarily relying on the Gas Committee with respect to those reserve estimates.

Senator BUMPERS. What were those figures in 1978 when NGPA was passed?

Mr. TALIAFERRO. Of course, the estimates based, of course, on the history available at the time were much lower. The estimates of the size of the resource base below 10,000 feet has increased dramatically as activity following November, 1979, when the NGPA provision became effective has taken place.

May I comment, however, on that subject? You must understand that below 10,000 feet it takes a long time to drill these wells. It takes a long time for the contract connecting process and an even still longer time for the results of that process to get into official statistics.

Senator BUMPERS. We really haven't felt the impact of it yet?

Mr. TALIAFERRO. We haven't felt it in statistics, but if I could show you that, the completions with enormous reserves in the field, you would see the impact. To contrast gas well completions in the western half of Oklahoma with oil well completions let's say, Senator, in Osage County where you bring a rotary rig in and drill for 5 days and find a marginal little well that produces for 1½ years, those reserves, it takes from 6 months to 2 years to drill these wells, and the reserves that are established by them, of course, are enormous. Two of them equal the output of a nuclear plant, but the statistics are lagging. The result is already produced, and yet in our basin, Senator, we have only explored 4 percent of the 7.

Senator BUMPERS. If I may ask one additional question—I know my time is up—I would like to ask any of you or all of you this question. Under the Natural Gas Act of 1936 or 1937, I forget when, there was a provision in there that prices would be based on cost. In other words, every price determination by the old Federal Power Commission and now FERC was supposed to be cost based or supposed to be just and reasonable. I'm sorry. Just and reasonable is the language, and you are all familiar with that.

Through the years all the commissions, the Federal Power Commission and FERC, and the courts, have never deviated from the proposition that that means the prices have to be cost based.

Now yesterday we got into this, and Chairman Butler's aide found an obscure little provision in the conference report of this bill where it said that FERC could use incentives. Now I can promise you I didn't know that was in there or I would have tried to do something about it then, but I just want to ask you what your attitude is about that.

One of the things that troubled me about this, and I am not adverse to maybe rectifying any really egregious inequities that exist in the NGPA, but my concern is what we are going to get out of it in the way of incentives. I feel that the incentives are there under existing law.

I am the owner of three gas wells, and you mentioned a moment ago that these little wells came in. I have had somebody drill. I just have 50 acres in one section, had a 7,000-foot dry hole in 1966, and 3 years ago Diamond Shamrock said we would like to drill on this, how about signing a lease? I said be my guest. You know there is a 7,000-foot dry hole, don't you? They moved over a quarter of a mile and hit a dab of gas. I think they get $8, $10 a month out of it, but I got to computing on the basis of the small royalty interest I have in that well. I can tell you that is a very profitable well for Diamond Shamrock because they are getting, if I am not mistaken—this is a field. I live in the only gas field in my State, and they are getting about $2.40 for that gas right now, and it is in an old field. All they did was just move over a quarter of a mile from the drill hole, and they hit enough gas there. I bet they weren't there 10 days all together in drilling that well.

Now that is quite an incentive, isn't it, when they will go in there and drill 4,000 feet in 10 days and hook a well like that up? There is not that much gas there, but $2.40 an Mcf, I will promise you that is a very profitable well for Diamond Shamrock.

To get back to the question on incentives, I don't know how we can provide any more incentives. We drilled 78,000 wells in this country last year, old and new gas. My consumers in my State, somebody said a statement here that what the consumers said when we passed this bill was wrong. I say they were absolutely dead right. The people in my State have gotten to the point where they are having to choose between eating, and it is a fact they are choosing between using gas and eating.

I don't want to sound populist, but that is a tragic situation for a country as great as this is. I feel very strongly about this, and my question is don't you think we have the incentives and isn't the fact that we increased from 60,000 to 78,000 wells last year concrete proof of this? Any of you?

Mr. **Terrill.** I would like to suggest that maybe the incentive has been misdirected. It certainly has in Louisiana, and the incentive is tilted toward one area of our State, and that is below 15,000 feet, and created an impossible economic situation for those of you who operate facilities in certain areas within our State.

We are proposing through what we suggested a more equitable distribution of that, and that it be, the NGPA, be revisited to add equal incentives in all areas, and it has been overemphasized in one area, and that is 107 deep.

Mr. **Taliaferro.** If I may, I think perhaps you were not here when I made my statement for the group of gas producers, and we, of course, essentially believe that the incentive structure in the NGPA has worked very well.

We do believe that the FERC should exercise the authority granted them in the act to provide additional incentive price for the intermediate depths between 10,000 and 15,000 feet.

Senator **Bumpers.** If I may on that point, I intended to ask any of you, you show a decline in the drilling between 10,000 and 15,000 feet, and the indication in most of the testimony here is that the reason is because that is very expensive drilling, and price incentive is not there for that near deep gas.

Could there be any other possible reason that drillers are not drilling at that depth?

Mr. TALIAFERRO. Let me say, Senator, depending on the province you are in, there is drilling in intermediate depths, and don't make any mistake about it. Where you are in a province with a column of sediments so that the deep exploratory well on its way down quite often discovers shallower reserves at the 10,000- to 15,000-foot increment, you are then having a lot of development of drilling taking place at those intermediate depths.

The thing that is lacking in the incentive posture that the NGPA provides—or incentive scheme that it provided if you will—is an adequate incentive for exploratory efforts at those intermediate depths where the cost of drilling, Senator, are expedientially greater than they are at shallower depths, and where you don't have the full column of sediments with the deep sediments as an attraction for your initial exploration program, so that there is an additional administrative action that we propose be taken with respect to the intermediate depths.

Senator BUMPERS. I am confused on statistics now. I believe in your testimony you said there has been, had been a decline of 1 percent in 1981 in wells at that depth? Was that your testimony?

Mr. TALIAFERRO. No, sir; not mine.

Senator BUMPERS. Between 1980 and 1981, there was a decline I understood of the number of wells in that category, and API—this is not necessarily inconsistent. Wait a minute.

Mr. TALIAFERRO. We think that there has been an increase.

Senator BUMPERS. I see now. We are talking about 1980, and in 1981 there was a 12-percent decrease, but between 1977 and 1980 according to the American Petroleum Institute there was an increase of 43 percent in drilling at that level.

I won't take any more time.

Mr. LAWRENCE. Can I add a quick point to that general question? I think Diamond Shamrock drilled under the incentive in section 103 of the Natural Gas Policy Act, which without it they would have not, and that is $15 a barrel oil equivalent of that gas—a nice, secure supply.

Senator BUMPERS. I am making the point that is an incentive and they took advantage of it. That is why we put that in there.

Mr. LAWRENCE. Exactly, and your State is blessed with a gas company that has one of the best gas supply situations in the country, and lowest prices.

Senator BUMPERS. They do indeed.

Senator TSONGAS. What is happening with hookups these days?

Mr. LAWRENCE. I think there is probably a falloff, Senator, from the 600,000 or so additions in calendar year 1980. We haven't measured it yet for 1981, but there are increased hookups at the rate of about a million a year.

Senator TSONGAS. How does that divide between conversions and new?

Mr. LAWRENCE. Yes, sir. The million or so, that 1.1 million that we had in 1980 are about half and half between conversions and new hookups.

Senator TSONGAS. Is that a constant percentage?

Mr. LAWRENCE. No. I think the portion attributed to conversions has been increasing dramatically as the supply situation has improved and as you have removed these horrible moratoriums you had on hookups that you had here in the Washington area from 1972 to 1978. You couldn't use gas if you wanted to, and you don't turn those around at the snap of a finger.

Senator NICKLES. Gentlemen, we very much appreciate your assistance before the committee. I know myself and Senator Johnston and probably other members of this committee have additional questions. I have several, and so we will submit those to you in writing, and would appreciate your written response for the committee.

We have two additional panels today.

Senator JOHNSTON. If I may interrupt, may I just invite the panel to submit in writing comments on the specific provisions of this legislation.

Senator NICKLES. Thank you very much. Our next panel consists of Gordon Gooch from the Petrochemical Energy Group, and James Rubin, National Association of Manufacturers. We have Donald Lykins, National Oil Jobbers Council; Leonard Cohn, the Chemical Manufacturers Association; and Jack Elam, Process Gas Consumers Group.

Mr. Gooch, would you proceed?

STATEMENT OF GORDON GOOCH, BAKER & BOTTS, ON BEHALF OF THE PETROCHEMICAL ENERGY GROUP

Mr. GOOCH. Thank you, Mr. Chairman. I would like, if I may, to focus on the problems of the industrial gas users. I have been asked to do this by the Petrochemical Energy Group, and I think it is fair to say from an industrial user's standpoint that there are two basic questions in the current situation.

The basic questions are: Is my gas supply secure? Can I reasonably anticipate that I have a supply on somebody's system? Can I anticipate that that supply will be maintained? And the second question is: Will I be able to afford the price of that gas and still be competitive against domestic competitors and foreign competitors?

Senator NICKLES Will you pull the mike up closer?

Mr. GOOCH. The assessment of the current situation under the Natural Gas Policy Act and the related situation is that the answer to both of those questions is no. The various biases and anomalies in the Natural Gas Policy Act relating to the allocation of supply by the Federal Government render the supply scenario in doubt even if you assume that there is going to be plenty of gas found.

Now the way the Federal Government allocates gas, first, the Federal Government is the silent and controlling partner of everybody that drills in the country. They influence the decision whether you go below 15,000 feet, above 15,000 feet, into a tight sand, or into a recompletion. It is the Federal Government influencing and controlling where people drill.

And the Federal Government also is influencing and controlling which pipelines can buy gas in the field because they have different size cushions on different pipelines and the pipelines with the deeper cushions obviously have a bidding advantage against those that do not. The Federal Government decides who can compete for OCS gas and who cannot compete for OCS gas, freezing out some pipelines, letting some pipelines in, allowing some distributors in, and keeping some distributors out.

The Federal Government determines who gets a Federal insurance policy so they can't lose their gas supply or some of their gas supplies on expiration of the contract and lets other gas supplies go to the highest bidder on expiration of the contract.

The Federal Government, through incremental pricing, has the power to influence the purchasing on the interstate pipelines, so the supply side is not secure.

As to the price side, particularly when you come into 1985, when some gas is deregulated, the pipelines with the deeper cushion can drive the price to the point beyond the choke point of the pipeline system that your plant happens to be on, and then you are in the situation where you either have to pay an uncompetitive price just to get the gas, or get off of it, so what is it that an industrial user has to hope and pray for? He has to hope and pray that by chance his plant is on a deep cushion interstate pipeline. He knows he doesn't want to be on an intrastate pipeline, and he knows he doesn't want to be on just any interstate pipeline. He wanls to be on the deep cushion interstate pipeline.

Now which States are those? We have tried to take a quick look, and we included this chart. By the time you correlate the Foster Associates data with data from OPPR and the FERC, if you have a plant in any one of these States, you ought to take a hard look, and indeed, if you want to take a look at it on a regional basis and say maybe there are some regions that are better off in another. You look at our appendix C where this Foster Associates data is aggregated by region and say where is the region that I can flow to where I am not subjected to being on a pipeline with little or no cushion, so then you finally back it down, looking at the pipelines that the Foster group studied to look for the deep cushions, and this is what you see.

You find the pipelines with the deep cushion, and you say please let my plant be on the deep cushion pipeline, and we have tried to trace these same pipelines out as best we can using a FERC map, and what you want if you can is to have your plant on one of these green lines. You don't want them on the red lines, assuming Foster Associates correctly anticipates who the deep cushion pipelines will be in 1985, but if by chance your plants happen to be on one of those green systems, the testimony of Mr Lawrence indicates that it is not going to do us any good to have our plants. He says that the cushion, perhaps, is dissipated by contracts signed freely by the pipeline suppliers.

Well, that raises two serious questions from the industrial standpoint. First of all, I think, you will find a number of industrials that have a feeling of real fear, concern, even repulsion on the idea that the Federal Government should come in and take away something that someone has voluntarily promised to pay, and instead make them live up to the contract and just take away the amount of money that they promised to pay. There is a serious problem with that.

Now on the expediency level, though, it seems most clear that if you say to the producer we are going to hold all your prices that you are currently regulated to a very low price, and on top of that we are going to roll back the prices that you have been promised under deregulation and that your pipeline suppliers have signed in writing voluntarily, you are going to roll that back, you are saying to the producer we are going to lower your revenues, and you can't help but wonder if you are going to lower the producer revenues what does that do to their drilling, the level of drilling, and you say if you are going to override their contracts, who is going to decide what provisions go in their place, and that seems clearly to be the Federal Government, and that seems to be a regressive step even backward from the Natural Gas Policy Act because what you are doing is reimposing price controls. You are calling it something else, but it is reimposition of price control.

I respectfully suggest that the bill introduced by Senator Johnston addresses these concerns and would earnestly request the consideration of this committee of that bill.

[The prepared statement of Mr. Gooch follows:]

A COMPARISON AND APPRAISAL OF TEN NATURAL GAS DEREGULATION STUDIES

February 16, 1982

PREFACE

A growing national debate concerns the need to correct shortcomings of the Natural Gas Policy Act (NGPA). This public controversy has resulted in publication of a number of natural gas deregulation studies whose stated or inferred conclusions support or repudiate decontrol. This report, prepared for the Chemical Manufacturers Association (CMA) by Foster Associates, Inc., presents an appraisal of ten natural gas deregulation studies. CMA recognizes the value of a sound appraisal of deregulation because its member companies rely heavily on natural gas for essential feedstock and critical process uses for which there are no realistic substitute fuels. The chemical industry is the largest single industrial gas consuming sector in the country and is vitally concerned with natural gas supply and cost.

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EXECUTIVE SUMMARY

At the request of the Chemical Manufacturers Association, Foster Associates has analyzed ten recent studies dealing directly or indirectly with ultimate (phased or immediate) total decontrol of natural gas prices. The table on the last three pages of this Summary provides a brief synopsis of the ten studies. This Summary evaluates the implications and key results of these studies with respect to the impact of phased total decontrol on gas prices, gas supply and the U.S. economy.

The ten studies present differing opinions concerning the impact of decontrol. They also vary in terms of apparent purpose, depth, levels of sophistication, and scope. More importantly, the studies vary widely in their treatment of gas prices under Natural Gas Policy Act (NGPA) as compared to ultimate (phased or immediate) total decontrol. These assumptions or predictions largely influence the findings of the studies in terms of impact on consumers, GNP, employment, and inflation. For example, a study based on very low price predictions under NGPA compared with very high price predictions under phased total decontrol price leads to a projection of a very high incremental cost in the case of total decontrol. A large increase in inflation would naturally result.

Of the ten studies, two are decidedly more comprehensive and, although different in important ways, represent the most realistic assessments. The two studies are "A Study of Alternatives to the Natural Gas Policy Act of 1978," DOE Office of Policy Planning and Analysis (OPPA), and "A Series of Papers on Decontrol of Natural Gas Prices," Standard Oil of Indiana (Amoco). These two studies show substantial economic benefits to the Nation arising from phased total decontrol, despite the fact that the two perceive the problems of NGPA much differently.

Three other studies differ markedly with OPPA and Amoco on the benefits of phased total decontrol. The three are: "Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans," American Gas Association [AGA (November)]; "Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms," Citizen/Labor Energy Coalition (Bleak Harvest); and "The Decontrol of Natural Gas Prices, a Price Americans Can't Afford," Energy Action (Energy Action). These three predict unrealistically high retail gas prices without considering the benefits of higher prices. In large measure, the findings of these three studies result from exaggerated and unsupportable field price projections and hence contribute little to a rational analysis of the decontrol issue.

Four of the remaining five studies generally support the conclusions of the OPPA and Amoco studies in regard to the benefits of total decontrol. The fifth, another AGA study (April) only addresses immediate total decontrol and focuses on its impact on low income gas users. The AGA (April) study assumes much lower decontrolled gas prices than the AGA (November) study, but presumably AGA's position on decontrol is the same.

All the studies indicate the obvious: earlier decontrol will raise gas prices faster than NGPA in the near term. More importantly, the studies indicate a number of problems with the phased partial decontrol scheduled by NGPA, which a number of the studies indicate could be eliminated by phased total decontrol. The extent of the problems with NGPA differ among the studies, but some of the problems include:

- "Fly Up" -- a price of decontrolled gas above market value due to the existence of below market priced (controlled) gas
- Regional pricing disparities -- unequal distribution of low and high priced gas
- Inefficient resource allocation arising from a panoply of NGPA price categories
- Price "spike" in 1985 -- a large sudden increase in gas prices as significant quantities of gas are decontrolled

In general, review of the analysis underlying the ten studies permits several reasonable inferences to be drawn in regard to the benefits and costs of phased total decontrol compared to NGPA.

- Reduction of regional pricing disparities
- Enhanced gas supply (e.g., as much as a 9 percent in Lower 48 production)
- Improved resource allocation
- Reduced energy imports (e.g., 600 MBD)
- Increased GNP in the long term
- Moderately negative to neutral impact (depending on extent and duration of phasing) on near term GNP and employment (e.g., a 0.1 to 0.2 percent point increase in unemployment)
- An earlier increase in inflation offset by a later decrease in inflation

- Higher gas prices in most gas markets at least through 1984 (e.g., a 12 to 17 percent increase in residential rates during the first year)

Review of the studies leads to the conclusion that there are major long-run national economic benefits to be gained from phased total decontrol that outweigh potential adverse repercussions. Therefore, the national debate should not be whether decontrol will improve economic efficiency but rather which phased decontrol scenario provides the best combination of economic efficiency and macroeconomic impact. As stated by the Cabinet Council

> The basic tradeoff among these options is between the magnitude of the first year consumer impact and the size of the efficiency gains. In general, smaller price increases also lead to smaller efficiency gains and vice versa.

A. Gas Prices

There are many uncertainties with respect to future price levels under NGPA or phased total decontrol. A key factor pertaining to NGPA partial decontrol is the amount of fly up, or the extent to which decontrolled gas prices will exceed market clearing levels in 1985 due to the existence of low priced gas. In other words, how high will decontrolled gas prices rise under partial decontrol.

OPPA and Amoco differ on fly up under NGPA, but each represents a plausible boundary on the subject. OPPA projects maximum realistic fly up; Amoco projects minimal realistic fly up. Aside from the fly up issue, of the two studies OPPA provides a more comprehensive and detailed review of NGPA pricing for NGPA categories other than decontrolled gas. The two studies in conjunction may be assumed to represent the range of plausible gas prices in the field and delivered to consumers under NGPA and phased total decontrol. Thus, the table on the following page compares the Amoco and OPPA projections of gas prices under NGPA.

A review of this table yields a number of conclusions. First, there will be significant gas price increases under NGPA. For residential users, OPPA projects a 53 percent real increase between 1982 and 1985, while Amoco projects a 48 percent increase. Most of this increase occurs in 1985, the first year of decontrol of most new gas. Between 1985 and 1990, OPPA projects an increase of 12 percent and Amoco projects an increase of 28 percent in residential gas prices under NGPA. Thus, both show a large real increase in gas prices for 1985 under NGPA, moderating thereafter.

The impact of phased total decontrol on gas prices is also shown on the table. Due to the presumed level of fly up under NGPA, OPPA shows very little difference between phased total decontrol and NGPA in 1985 and beyond. Amoco, with little fly up projected for NGPA, shows higher price increases under phased total decontrol.

It should be noted that the projected percentage increase in field prices received by producers is higher than the increase in prices paid by residential users. This is due to substantial fixed transportation and distribution costs involved in delivering gas to residential users. Moreover, both these studies project partially offsetting benefits to consumers by virtue of reduced imported gas supply or prices.

The table illustrates the plausible limits of the impact of decontrol, partial and phased total. The two studies differed markedly in major assumptions and projections concerning gas prices. Notwithstanding these dif-

Table 1

PROJECTED PRICES UNDER NGPA
(1981 Dollars per Mcf)

	1982 (1)	1985 (2)	1990 (3)
A. NGPA			
Average Field Prices			
OPPA	$2.47	$4.85	$5.83
Amoco	2.05	3.90	5.25
Average Residential Prices			
OPPA	4.70	7.18	8.02
Amoco	4.50	6.65	8.5[illegible]
B. Phased Total Decontrol			
Average Field Prices			
OPPA	3.33	5.11	6.00
Amoco	2.60	5.40	6.80
Average Residential Prices			
OPPA	5.52	7.26	8.18
Amoco	5.05	7.70	9.45
C. Percentage Real Increases In Prices Under Total Decontrol Over NGPA			
Average Field Prices			
OPPA	35%	5%	1%
Amoco	27	38	30
Average Residential Prices			
OPPA	17	1	2
Amoco	12	16	11

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ferences, both studies reached the conclusion that total decontrol was in the national interest.

Gas prices represent the first step in the complex economic process of adjusting to decontrol. A related consideration in evaluating decontrol is the impact on gas supply, discussed next.

B. The Relationship Between Gas Supply and Price

Only five of the studies analyzed here address the relationship between domestic gas supply and price. Of the five, three indicate a positive response, one shows no change in Lower 48 production, and the fifth expects a short-run positive response and a long-run negative response.

Amoco projects a significant increase in Lower 48 production under phased total decontrol compared to NGPA, starting immediately and gaining momentum through 1990. AGA (April) finds that during the first five years of total decontrol, there would be more potential flowing new onshore gas than under NGPA. However, these potential increases were not realized due to AGA's projected drop in gas demand. Likewise, the Energy Information Agency (EIA) study, which only goes to 1985, projects an increase in Lower 48 supply under immediate total decontrol, compared with NGPA. It can reasonably be inferred that under phased total decontrol these latter two studies would also project an increased supply response.

On the other hand, Energy Action argues that controlled prices are sufficient "to encourage exploration by most companies." Thus, Energy Action projects no difference in Lower 48 production under all decontrol scenarios. The commentary by Energy Action ignores the obvious -- higher prices will encourage more exploration and development by all companies. This is fundamental economics.

OPPA projects that under phased total decontrol, Lower 48 gas supply would be higher in the short run but lower after 1985. This result reflects the fact that OPPA's supply model is driven by new gas prices only. Since OPPA projects higher decontrolled new gas prices under NGPA than total decontrol, less gas is the result. Moreover, OPPA does not take into account the impact of changes in old gas prices on enhanced gas recovery.

Amoco's results are more consistent with views long expressed by other analysts of natural gas supply economics. It is reasonable to expect a greater increase in domestic gas supply under phased total decontrol than under partial decontrol. For example, higher old gas prices would provide incentives for increased recovery from known reserves as well as greater cash flow for investment in drilling and exploration. Additionally, since NGPA does not decontrol all new gas, total decontrol would provide additional incentives for the development of additional categories of new gas.

Both Amoco and OPPA agree that greater gas supply would be available to high priority users under total decontrol. Total decontrol would eliminate artificial gas demand, leaving more gas for high value uses. However, Amoco stresses the supply side and OPPA the demand side.

Since the precise amount of increased gas supply under phased total decontrol is subject to some uncertainty, the economic consequences of gas decontrol are likely to fall in the range of OPPA and Amoco results. The economic consequences of phased total decontrol versus NGPA are discussed next.

C. Macroeconomic Impacts

Among the studies which measure the macroeconomic impacts of phased total decontrol, there is general agreement that macroeconomic models are inadequate to measure the benefits of microeconomic changes. Hence, results should be viewed as imprecise. Decontrol will yield efficiency gains which will benefit the Nation as a whole, but macroeconomic models are not well suited to assess these gains.

All the studies which provide quantitative estimates indicate overall long run increases in GNP, employment, and Federal, state and local tax receipts. With the exception of Amoco, the studies which provide quantitative estimates also recognized that short term negative impacts might first result, but then would be outweighed by long run positive impacts. Amoco projects immediate increases in the economic benefits for the Nation under phased total decontrol.

Conversely, the Energy Action study suggests dire economic consequences of decontrol, but did not provide estimates on unemployment or drop in GNP. It appears that Energy Action considers the transfer of funds as a complete loss to the economy. Obviously it is not; hence, Energy Action's forecasts of the negative economic effects of phased total decontrol are without merit.

The studies are unanimous that phased total decontrol would initially increase measured inflation compared to NGPA, but after the initial impact, the rate of increase in inflation would be less than NGPA. Any differences are essentially matters of timing and the extent of initial impacts. Table II below shows the estimates on measured inflation.

Table II

COMPARISON OF ESTIMATES OF THE IMPACT OF PHASED DECONTROL ON INFLATION

(Percentage Point Difference in
Year to Year Change from NGPA)

	ESTIMATE			
Year (1)	OPPA (2)	Energy Action (3)	Amoco (4)	Loury (5)
1981	NA	2.43	0.3/per year	0.07
1982	0.2	(0.11)		0.26
1983	0.8	(0.01)		0.44
1984	0.8	0.02		0.54
1985	(0.9)	(1.86)		NA
1986	(0.7)	NA	NA	NA
1987	(0.1)	NA	NA	NA
1988	(0.1)	NA	NA	NA
1989	0.0	NA	NA	NA
1990	0.0	NA	NA	NA

NOTE: A positive number indicates an increase in inflation compared with NGPA and *vice versa*.

The initial impact on inflation is not that substantial, aside from the projection by Energy Action which is based on unrealistic assumptions on gas prices. The studies agree that under NGPA or phased total decontrol, there will be a small increase in measured inflation with the only difference between the two decontrol options essentially one of timing.

Only Amoco and OPPA project the impact of phased total decontrol on energy imports. In Table III, Amoco projects much higher savings based on the anticipated higher domestic gas supply response as well as the fact that higher gas prices will also increase domestic oil production. Based upon the ultimate negative gas supply response under total decontrol, OPPA projects a small increase in oil imports beginning in 1990.

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Table III

COMPARISON OF THE EFFECT OF PHASED DECONTROL
ON ENERGY IMPORTS; NET CHANGE FROM NGPA
(Thousands of Barrels per Day)

	OPPA	Amoco
1982-1985	636	575
1986-1990	91	1,050

Thus, for the first few years, the two agree that the savings would be approximately 600 MBD. At current oil prices, this is worth nearly $8 billion per year. An average of the two projections for the period 1986 to 1990 would yield approximately the same savings.

D. Synopsis of Individual Studies: The Impact of Ultimate Total Decontrol Versus NGPA

SYNOPSIS OF INDIVIDUAL STUDIES:
THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
Cabinet Council on Natural Resources and Environment, "Natural Gas Deregulation" (Cabinet Council)	Phasing in deregulation with a broad definition of "new gas" and a high target price for "old gas" will result in higher gas price increases and greater national efficiency gains.	Policy oriented, states crux of issue as tradeoff between higher gas prices in short run and national efficiency gains.
DOE, Office of Policy Planning and Analysis, "A Study of Alternatives to the Natural Gas Policy Act of 1978" (OPPA)	Phased total decontrol will yield $19 billion in national efficiency gains compared with NGPA. Short run macroeconomic consequences on inflation, GNP, and employment outweighed by long-run benefits. Cites infirmities of NGPA — fly up, regional pricing disparities and possibility of extended regulation, the worst case of all.	Most comprehensive and well documented of ten studies; generally reasonable results given assumptions. Assumes the maximum realistic fly up under NGPA; projects ultimate total decontrol eliminates fly up. Underestimates overall national efficiency benefits of ultimate total decontrol largely because gas supply response is understated and fly up under NGPA might be overstated.
DOE, EIA, "Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices," Prepublication Draft (EIA)	Decontrol of old and new gas in 1982 will decrease GNP in 1982 and 1983 and increase GNP thereafter; decrease oil and gas imports throughout the period; and would cause an increase in household expenditures for gas 1982-1984 but decreased household expenditures for gas in 1985. Did not project phased total decontrol.	Results generally appear reasonable falling in the range of OPPA and Amoco results. However, shows gas prices under immediate total decontrol to be lower than NGPA, in 1985 without explaining why. Lack of documentation in draft renders evaluation difficult.
AGA, "Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans" [AGA (November)]	Assumed decontrolled gas prices at 110% of distillate applicable to nearly all decontrolled gas under NGPA and 60% of all gas under phased total decontrol with the remainder at 70% of crude. Thus projects that wellhead gas prices under NGPA would rise 51% from 1984 to 1985 in real terms ($3.68 to $5.56/MMBtu); under phased total decontrol wellhead gas prices would rise 64% from 1984 to 1985 ($4.22 to $6.93). Projects little difference after 1987.	Questionable basis for major assumptions. Illustrates, albeit in an exaggerated fashion, the potential fly up problem under NGPA. Loses credibility in stretching its case to phased total decontrol.

Sheet 2 of 3

SYNOPSIS OF INDIVIDUAL STUDIES:
THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
AGA, "Cost of Immediate Total Wellhead Price Decontrol of Natural Gas to Low Income and Disadvantaged Groups" [AGA (April)]	Immediate total decontrol would produce a large adverse impact on the Nation and on low income groups in particular. The inflation rate would be increased appreciably, demand for gas would drop considerably, and imports of oil would increase. Did not address phased total decontrol.	Much lower decontrolled prices than November study; shows large price increase under immediate total decontrol. Under NGPA and immediate total decontrol, tied decontrolled gas prices to residual fuel oil prices less transportation.
Citizen/Labor Energy Coalition, "Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms" (Bleak Harvest)	The farming industry would be devastated by accelerated decontrol. Fertilizer prices and other production costs would rise dramatically; heating costs would nearly double; electricity prices would rise sharply in Texas, Oklahoma, California and Kansas.	Results based upon unreasonably high prices of decontrolled gas; wholly ignores intrastate situation in projecting fertilizer prices and impact on electricity.
Energy Action, "The Decontrol of Natural Gas Prices, A Price Americans Can't Afford" (Energy Action)	Summary results generally compare different decontrol scenarios (including NGPA) with continued regulations. Shows huge dollar impact on consumers. Cites no advantages to decontrol. Projects that decontrol will increase unemployment, inflation and result in productivity declines.	Dramatically overstates price effects and macroeconomic consequences even under their price projections. Equates gas prices with somewhat high crude oil projections, and assumes very low regulated prices, so shows large near term price effect. Erroneously assumes transfer of funds resulting from higher prices is lost to the economy.
Glen Loury, "An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices," (Loury)	Decontrol would increase inflation initially and cause income redistribution between producers and consumers, but the benefits of increased economic efficiency and reduced dependence on imported oil would outweigh the costs.	Theoretically sound, but gas prices under all decontrol scenarios through 1984 seem unrealistically low.

Sheet 3 of 3

SYNOPSIS OF INDIVIDUAL STUDIES:
THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
Amoco, "A Series of Papers on Decontrol of Gas Prices" (Amoco)	Ultimate total decontrol would result in increased gas and oil production, increased efficiency in transportation and distribution, decreased oil and gas imports, and an overall improvement in the U.S. energy balance. Projects immediate and substantial price impacts on GNP and employment. Assumes decontrolled gas prices to be equivalent to residual fuel oil netted back to the field under all decontrol cases.	Sensible approach to assessing long run national benefits and only study to adequately reflect economics of gas production and the response of gas supply to higher prices. Assumes no fly up under NGPA, so may overstate short run impact of total decontrol on gas prices. Only study to show immediate positive impact of decontrol on GNP and employment, which appears unlikely. However, longer run estimates appear reasonable in light of projected gas supply response.
Mellon Institute, "Eight Great Energy Myths, The Least Cost Strategy." (Mellon)	Study did not address decontrol *per se*. Due primarily to interfuel competition, states that the price of gas will not rise to oil equivalency upon decontrol.	Does not project gas prices; rather discusses possibilities if gas prices were to reach oil equivalency at retail and concludes that gas prices could not without reducing demand and therefore would not.

I. Introduction

At the request of the Chemical Manufacturers Association (CMA), Foster Associates has summarized and evaluated ten studies dealing directly or indirectly with decontrol of natural gas field prices. The ten studies are listed below.

1. "Natural Gas Deregulation," Cabinet Council on Natural Resources and Environment (July 30, 1981) -- Cabinet Council

2. "A Study of Alternatives to the Natural Gas Policy Act of 1978," U.S. Department of Energy, Office of Policy, Planning and Analysis (November, 1981) -- OPPA

3. "Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices," U.S. Department of Energy, Energy Information Administration (August 1981) -- EIA

4. "Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans," American Gas Association, (November 6, 1981) -- AGA (November)

5. "Cost of Immediate Total Wellhead Price Decontrol of Natural Gas to Low Income and Disadvantaged Groups," AGA, (April 9, 1981) -- AGA (April)

6. "Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms," Citizen/Labor Energy Coalition, (November 2, 1981) -- Bleak Harvest

7. "The Decontrol of Natural Gas Prices, A Price Americans Can't Afford," Energy Action, (February 19, 1981) -- Energy Action

8. "An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices," prepared by Glenn C. Loury for the Natural Gas Supply Association (April, 1981) -- Loury

9. A Series of Papers on Decontrol of Natural Gas Prices, Standard Oil of Indiana (1981) -- Amoco

10. "Eight Great Energy Myths, The Least-Cost Strategy -- 1978-2000," The Energy Productivity Center, Mellon Institute (1981) -- Mellon

The ten studies represent a diversity of views on gas pricing in the field, although for the most part the studies assessed the impact of various decontrol scenarios rather than explicitly recommending an appropriate decontrol option. Some of the studies dealt with the impact of the Natural Gas Policy Act of 1978 (NGPA), others with alternative decontrol options broader in scope or earlier in timing than NGPA. Aside from NGPA, the decontrol options addressed by the ten studies are not necessarily consistent in scope, timing or other particulars. This is not surprising since the various studies were not directed at analysis of common pending legislation.

Moreover, the ten studies generally differ in purpose, sophistication and most importantly, important assumptions such as the price of gas, both in the field and at the burner-tip; the relationship between gas price and supply; the impact of decontrol on energy demand; and macroeconomic impacts. It is these four factors which are primarily addressed herein.

Although the majority of these studies did not state a position on decontrol, one can be surmised or inferred based on results. The following table represents a summary of apparent positions on total decontrol (phased or immediate) vis-a-vis NGPA by the ten studies.

APPARENT POSITIONS ON ULTIMATE
TOTAL DECONTROL VIS-A-VIS NGPA

Neutral	Negative	Positive
EIA	AGA (two studies)	Cabinet Council
	Citizen/Labor Energy Coalition	OPPA (DOE)
	Energy Action	Loury
		Amoco
		Mellon

Thus it appears that half the studies would support phased or total decontrol compared with NGPA. In interpreting the foregoing, however, it should be borne in mind that the various studies can have a large number of cases with varying assumptions. To keep this critique within manageable proportions, "reference" -- "base" -- "central" assumptions employed within these studies have generally been relied upon in deriving conclusions.

II. Overview

A. Issues

In one fashion or another, all ten studies dealt with decontrol. The majority dealt with NGPA, either in isolation or in conjunction with other decontrol options. Thus, the NGPA, a complex piece of legislation, requires some elaboration.

The NGPA essentially provided for the deregulation -- cessation of price controls -- on most but not all new gas over a long period of time. The NGPA classified new gas into a number of categories, each with a different price treatment. Various types of "high cost" natural gas (NGPA Section 107[c][1], [2], [3] or [4]), the majority of which at the present time is from well completion locations more than 15,000 feet deep, are already deregulated. However, this category constitutes only a small portion of current gas production. In 1985, a larger amount of new gas (Section 102[c] and certain 103[c]) is decontrolled. Continuing under price controls until 1987, when it is deregulated, is gas produced from new onshore production wells with completion locations at a depth of 5,000 feet or less. Continuing under price controls even after 1987 and never decontrolled by NGPA is (1) gas from new onshore production wells which was committed or dedicated to interstate commerce on April 20, 1977 and (2) new gas from old OCS leases (Section 102[d]), an old lease being one entered into before April 20, 1977. In summary, over approximately eight years virtually all new intrastate gas and most new interstate gas is deregulated.

With respect to old gas -- gas committed under contracts as of November 8, 1978 -- the NGPA effectively established ceilings for most categories, both interstate and intrastate. However, the effective ceiling prices are generally higher for intrastate purchasers than interstate purchasers. Also, most intrastate rollover (expired) contracts are deregulated in 1985, while interstate rollovers remain under price controls.

The foregoing summary of certain aspects of NGPA is by no means comprehensive, but provides a background for some of the concerns expressed by different parties with respect to NGPA. Among the problems of NGPA cited by various parties are the following:

- "Fly up" -- An increase in new gas prices above market clearing levels.
- Wide regional diversity in gas costs after 1984 due to the unequal distribution of the "cushion."
- Price "spike" -- the increase in gas prices in 1985 caused by the large increase in oil prices since NGPA ceiling prices were enacted.
- Adequacy of gas supply due to relatively low NGPA prices.
- Creation of artificial demands due to relatively low NGPA prices.
- Excessive natural gas prices after NGPA decontrol, due to indefinite pricing escalators.
- Some or all of the foregoing leading to a reimposition of the regulation.

A concern addressed in nearly all of the ten studies was the transition between a regulated market and decontrol. However, there is considerable diversity as to the solution, varying between the extremes of more versus less regulation. Of the ten studies, those which addressed long-run economic efficiency supported ultimate elimination of all natural gas price controls in the field. Those studies which were primarily concerned with the short term price impact of earlier and/or wider decontrol (compared with NGPA) seem to oppose wider or earlier decontrol. In summary, as stated by the Cabinet Council:

> The basic tradeoff among these options is between the magnitude of the first year consumer impact and the size of the efficiency gains. In general, smaller price increases also lead to smaller efficiency gains and vice versa.

As addressed in the next section, early and expanded decontrol will certainly result in gas prices higher than current policy until 1985. The major issues are the net long-run benefits (or costs) of ultimate total deregulation.

III. Brief Summary and Review of Individual Studies

STUDY

"Natural Gas Deregulation"
Cabinet Council on Natural Resources and Environment
July 30, 1981
(herein called Cabinet Council)

Objective
To present and evaluate various policy options regarding the phasing out of natural gas regulation.

Coverage
Policy oriented. Addresses NGPA, accelerated partial decontrol, phased total decontrol and immediate total decontrol. Assesses different options on new gas.

Assumptions
Relies on OPPA draft results. All cases assume full decontrol by 1985.

Results
Wider and/or earlier decontrol yields positive efficiency benefits compared with NGPA. The highest price for new gas yields the greatest efficiency gains. The larger the amount of new gas decontrolled, the higher the residential price impact in 1982 and 1983. All of the options have roughly the same prices in 1984 and 1985.

Comments
Did not evaluate regional pricing disparities.

STUDY

"A Study of Alternatives to the Natural Gas Policy Act of 1978"
U.S. Department of Energy, Office of Policy, Planning
and Analysis, November 1981
(herein called OPPA)

Objective

To assess NGPA and alternative natural gas policies.

Coverage

Most comprehensive of ten studies. Five broad policy options were examined, extending out to 1995. Policy options included NGPA, phased total decontrol, full decontrol in 1982, and extended control to 1995. Analyzed field, city-gate and retail prices, interstate and intrastate. Estimated impacts on GNP, inflation, unemployment, imports, and net national economic benefits.

Assumptions

Varied key assumptions concerning oil prices, gas availability and demand, bidding behavior by pipelines, magnitude of inter- and intrastate "cushion." Reference Case:

- Assumes increasing amounts of decontrolled gas
- To clear the market at retail, decontrolled gas prices must fly up to as much as 100 percent of wholesale distillate under partial decontrol
- Supply driven solely by price of new gas
- Modest amount of category creep under NGPA through 1984

Results

Phased total decontrol yields $19 billion in national efficiency gains, compared with NGPA. NGPA and extended regulation could cause substantial loss of efficiency gains; phased decontrol would smooth out abrupt price increases compared to NGPA, where immediate decontrol would advance them to 1982. Phased decontrol would result in cost savings on imported gas, increased domestic production initially. Initial impact on GNP and unemployment will be negative under immediate or phased decontrol. Long-run benefits outweigh short-run negative effects of decontrol. Little difference in gas prices beginning in 1985 between NGPA and ultimate total decontrol.

Comments

Well-documented analyses and generally reasonable results. Understates supply response and therefore understates efficiency gains. Projection of fly up and hence gas prices under NGPA may be overstated, but represents upper plausible limit.

STUDY

"Analysis of Economic Effects of Accelerated
Decontrol of Natural Gas Prices"
Prepublication Draft -- U.S. Department of Energy
Energy Information Administration, August 1981
(herein called EIA)

Objective

To assess the short-term impact of accelerated deregulation on supply, demand, and prices of natural gas, as well as GNP.

Coverage

Projects economic impact under a multitude of scenarios, varying supply and demand levels, amount of decontrolled gas, FUA restrictions, etc. Covered NGPA vs. total immediate decontrol for 1982-1985. Did not address phased total decontrol.

Assumptions

Central case gas demand and supply based on 1980 Annual Report, with adjustment for higher demand and supply; FUA restrictions revoked. Did not state assumptions on fly up or decontrolled gas prices.

Results

Accelerated deregulation will not necessarily lead to uniformly higher prices 1982-1985. Immediate total decontrol leads to higher prices 1982-1984, but lower prices in 1985 than NGPA. Total decontrol results in reduced oil and gas imports of 670 MBD over the period. Total decontrol would lead to increased household expenditures on gas in 1982 but decreases in 1985 compared with NGPA. GNP woud decrease in 1982 and 1983 but increase thereafter.

Comments

Inadequate documentation provided; however, results seem reasonable and generally fall in range of Amoco and OPPA. Gas price projection under immediate total decontrol in 1985 below NGPA; no explanation provided.

STUDY

"Consumer Impact of Indefinite Gas Price Escalator Clauses
Under Alternative Decontrol Plans"
American Gas Association, November 6, 1981
(herein called AGA [November])

Objective

Estimate wellhead gas prices, average retail gas prices, utility gas sales, annual residential gas bills and total consumer gas costs under four different gas decontrol scenarios.

Coverage

Projects the prices and gas sales for the aforementioned sectors for 1981-1990 period; for four NGPA scenarios and "phased decontrol" (three-year phaseout) scenario.

Assumptions

- Decontrolled gas prices rise to 110 percent of distillate for all decontrolled gas under NGPA; 60 percent of all gas under phased total decontrol with remainder at 70 percent of crude
- One percent annual real increase in price of crude oil
- Repeal of FUA restrictions
- NGPA "central estimate" assumes indefinite escalators are defused over three years beginning in 1985

Results

The wellhead price increase in 1985 would be 51 percent under NGPA and 64 percent under phased decontrol. In both cases, utility sales drop and remain below pre-decontrol levels for the entire period. Annual residential gas bills rise 54 percent from 1981-1985 under NGPA, and rise 82 percent for that period under phased decontrol. Under NGPA, a wealth transfer of $29 billion (constant 1981 dollars) would occur in 1985. Under phased decontrol the wealth transfer would be $52 billion.

Comments

Decontrolled prices are much higher than April study -- comparable to Bleak Harvest and Energy Action. Under phased decontrol uses contract ratchet problem to justify 60 percent at 110 percent distillate; ignores contracts for remainder and assumes priced at marginal market clearing levels. Comparison of phased total and NGPA thus somewhat distorted -- overstates difference. Ignores the fact that pipelines and producers, the two parties in contracts, have an interest in selling gas and that total decontrol will likely reduce fly up instead of expanding it.

STUDY

"Cost of Immediate Total Wellhead Price Control of Natural
Gas to Low Income and Disadvantaged Groups"
American Gas Association, April 9, 1981
(herein called AGA [April])

Objective

To assess the economic impacts on various income groups of immediate total decontrol.

Coverage

Covered the period 1981-1985. Compared NGPA and immediate total decontrol. Focused on residential users, in particular lower income and disadvantaged groups -- the poor, the blacks and the aged.

Assumptions

No fly up under either case. Decontrolled prices equivalent to market clearing price of $6.12 per Mcf in 1985 (apparently residual oil price netted back to the field). Under total decontrol assumed all gas immediately rises to $5.50 per Mcf, rising to market clearing level in 1985. States "(e)sclation clauses in most contracts would permit this rise to occur quickly." Increases supplemental (LNG and "New Technology") gas prices under total decontrol.

Results

Under immediate total decontrol, 10 percent drop in gas demand. Residential gas prices increase 67 percent for 1981-1984 period; 29 percent in 1985. Projects increase in oil imports of 800 MBD.

Comments

Of little value in addressing phased total decontrol. Later study done by Decision Analyses Corp. for AGA showed that one-third of gas contracts could not rise quickly to market clearing levels. The increase in supplemental gas prices due to decontrol is unjustified and inconsistent with common sense and OPPA and Amoco results. Basis for increase in oil imports questionable since industrial and electric utility gas prices still projected to be lower than oil.

STUDY*

"Bleak Harvest: The Impact of Natural Gas
Decontrol on American Farms"
Citizen/Labor Energy Coalition, November 2, 1981
(herein called Bleak Harvest)

Objective

The impact of accelerated natural gas decontrol on farmers.

Coverage

Covered the period 1981-1984. Projected field prices for gas and delivered fertilizer prices under NGPA and phased total decontrol. Relies on other studies for homeheating bills and macroeconomic impacts.

Assumptions

Use of natural gas in farm production at 960 Bcf, representing direct farm use (irrigation, etc., but excluding heating) as well as use of gas in fertilizer production.1/ For phased decontrol, assumed decontrol of post-1981 gas and stepped up price increases for old gas to raise its price to the OPEC oil equivalent by 1985 -- $9.00/MMBtu. Did not specify other assumptions.

Results

Accelerated decontrol would add $1.54 billion to farm production costs in 1982, $2.8 billion in 1983 and $3.9 billion in 1984. Additionally, homeheating bills would rise dramatically. Farmers in California, Texas, Oklahoma and Kansas would be hard hit because of gas use in these states by electric utilities. Farmers in the Southwest will be hardest hit by increases in gas used for irrigation (93 percent of direct farm use). Gas decontrol will place upward pressure on interest rates and tend to depress demand for farm products.

Comments

Projected price increases unsupported and way out of line with conventional thinking. Aside from this, study is intriguing because a proper analysis would have probably yielded the opposite results. Since intrastate gas provides 60 percent of nitrogen fertilizer, and intrastate gas prices will be lower under ultimate total decontrol, particularly with the fly up projected by Bleak Harvest, nitrogen fertilizer prices would be lower in the long run. Similarly, electric bills and irrigation costs would be reduced in the Southwest. Farmers in the Southwest and other gas producing states such as Kansas and Nebraska would be likely beneficiaries of increased royalties. On net balance, difficult to foresee farmers being disadvantaged by phased total decontrol.

1/ The majority of the 960 Bcf is for fertilizer production, with most of the remainder for irrigation.

STUDY

"The Decontrol of Natural Gas Prices,
A Price Americans Can't Afford"
Energy Action, February 19, 1981
(herein called Energy Action)

Objective

To assess impact of decontrol of natural gas on the nation, and compare various decontrol scenarios with continuing regulation.

Coverage

Examines four scenarios for 1981-1985. Scenarios range from immediate deregulation to continuation of NGPA with extension of controls indefinitely.

Assumptions

Prices above an"optimimum" level will "contribute little to additional production." NGPA price trajectory 20 percent/year, inflation 11 percent; decontrolled gas prices tied to crude oil parity -- $12.25/Mcf in 1985; new gas accounts for 65 percent of production in 1985 under NGPA.

Results

Cites no advantages to decontrol; says decontrol will have $626 million impact on consumers from 1981 to 1985 compared with continuing regulation; inflation and unemployment will result; there will be a tremendous shift of wealth from gas-consuming to gas-producing states; oil company profits will skyrocket and will not be reinvested in exploration and production.

Comments

Presentation difficult to grasp on one reading because it compares decontrol effects to those of extended controls instead of NGPA. Even so, price projections are unreasonably high and effects on economy overstated. Assumes very low controlled (NGPA) prices and very high decontrolled prices, so exaggerates comparison.

STUDY

"An Analysis of the Efficiency and Inflationary Impact
of the Decontrol of Natural Gas Prices,"
Prepared by Glenn C. Loury
For the Natural Gas Supply Association
April 1981
(herein called Loury)

Objective

To assess the impacts of decontrol by means of cost/benefit analysis.

Coverage

Examines efficiency benefits, import reduction benefits and equity costs of decontrol for several scenarios, including NGPA, phased total decontrol, and immediate total decontrol; gas prices and supply projections extend through 1990 but measured costs and benefits only through 1984 and only for immediate total decontrol.

Assumptions

Absent price controls, gas at the wellhead priced at parity with residual fuel oil less transportation costs; supply and demand for gas are responsive to price; assumes same decontrolled price under different scenarios (no fly up), but a lag in actual average price increase received by producers due to contract limitations.

Conclusions

Efficiency cost of continued price controls is approximately $4.6 billion/year for 1981-1984 period; total decontrol would eventually reduce oil consumption by 2.8 million barrels per day; transfers from consumers to producers would average $11.9 billion/year for 1981-1984 period; total immediate decontrol would raise the inflation rate by less than 0.6 percent in first year, dwindling with each year; efficiency benefits outweigh costs of inflation and income redistribution for immediate total decontrol.

Comments

Gas prices under all scenarios seem low, particularly in years through 1984; short-term price impact of decontrol is therefore probably understated. Analysis is theoretically sound but results heavily influenced by gas prices.

STUDY

A Series of Papers on Decontrol of
Natural Gas Prices
Standard Oil of Indiana, 1981
(herein called Amoco)

Objective
To assess the impact of accelerated decontrol on natural gas prices and production, demand, consumer prices, GNP, inflation and unemployment, and other issues by analysis of several alternative deregulation scenarios.

Coverage
Compares NGPA to phased total decontrol and immediate total decontrol for the years 1982, 1985 and 1990.

Assumptions
Decontrolled gas prices equivalent to residual oil less transportation costs; increased producer revenues fully reinvested in gas exploration and development.

Results
Residential gas price will increase by 26 percent in 1985 under NGPA; phased total decontrol causes 16 percent increase over NGPA in 1985; Lower 48 gas production will increase by about 9 percent more than under NGPA. Phased decontrol will result in immediate positive impact on GNP reaching $69 billion over NGPA in 1985; and imports of oil and gas will decline substantially compared to NGPA. Total decontrol will improve the Nation's overall energy balance and the allocation of resources in the economy.

Comments
Well-stated qualitative considerations but lack of backup data to evaluate quantitative results. Cites a number of advantages of total decontrol not addressed by other studies, such as enhanced oil production and greater efficiency of gas transportation and distribution. In projecting gas supply under total decontrol, reflects realistic expectations of responsiveness of gas supply to uniform pricing, higher prices and enhanced cash flow. Conclusion of immediate positive impact of decontrol on GNP and employment overly optimistic; may have understated fly up under NGPA; well described and supportable rationale for long-run positive impacts of total decontrol.

STUDY

"Eight Great Energy Myths,
The Least-Cost Strategy -- 1978-2000"
The Energy Productivity Center, Mellon Institute, 1981
(herein called Mellon)

Objective

To address eight "myths": energy is scarce; energy cost increases will only get worse; the environmentalists are causing the problem; we cannot conserve our way to economic growth; imports are the problem; the generation of electricity is a natural monopoly; fuel for cars is the problem; deregulated gas will rise to the price of oil.

Coverage

Did not deal with phased decontrol *per se* or make projections under decontrol.

Assumptions

The elimination of all regulations affecting energy choices, and technology selection by consumers according to their economic self-interest.

Results

The common beliefs listed above were myths. The implications for government policy are that in view of the competition in energy service markets the following could be eliminated -- price controls for fuel and perhaps electricity; subsidies for fuels and technologies; regulations covering fuel use and the FUA; and most other regulations. On the subject of gas prices, concluded that under decontrol would not reach Btu parity at retail with oil because if it did, demand would drop.

Comment

Generally supports deregulation and could be broadly interpreted as saying competition will put a lid on gas prices. All other studies based gas prices on oil, if only for a convenient analytical approach. Mellon findings could be a little naive, particularly in the short run, but does imply a rather important consideration. Gas prices do not necessarily have to rise to oil prices -- the ultimate long-run decontrolled price will be one which balances supply and demand and that price could be below (or above) Btu parity with oil in retail markets.

IV. Comparison of Ten Studies

This section integrates and compares the ten studies. Due to the varying objectives, methodologies and results in these studies, this section is organized by subject rather than by study. Gas prices, gas supply, gas demand and macroeconomic impacts are addressed in order. Whenever possible, three decontrol options are addressed:

- NGPA
- Phased Total Decontrol
- Total Immediate Decontrol

A. Gas Prices

In addressing various decontrol options, a crucial factor is the impact of decontrol on average field prices. This is important because the field price of gas is the major variable cost element in retail rates and effects supply, demand and macroeconomic impacts. Throughout this section, NGPA is the standard of comparison; hence, the impact of NGPA is discussed first.

Table 1 on the next page compares available price projections (in 1981 dollars) under NGPA for the various studies. Focusing first on average field prices, a review of the table indicates considerable variation in the forecasts in the 1982-1984 period as well as in the post decontrol period. The 1982 projections vary by as much as 46 percent, with AGA (November) the highest and Energy Action the lowest. The 1984 projections vary as much as 62 percent, again with AGA (November) being the highest and Energy Action the lowest.

Understanding the basis for this variation is virtually impossible, as only two studies -- OPPA and Energy Action --

Table 1

COMPARISONS OF PRICE PROJECTIONS UNDER NGPA
(1981 $/Mcf or MMBtu)

	1 9 8 2			1 9 8 3			1 9 8 4			1 9 8 5			1 9 9 0			Decontrolled "New" Gas Prices Wellhead	
Study (1)	Field Price (2)	Resi-dential Price (3)	Indus-trial Price (4)	Field Price (5)	Resi-dential Price (6)	Indus-trial Price (7)	Field Price (8)	Resi-dential Price (9)	Indus-trial Price (10)	Field Price (11)	Resi-dential Price (12)	Indus-trial Price (13)	Field Price (14)	Resi-dential Price (15)	Indus-trial Price (16)	1985 (17)	1990 (18)
OPPA (Nov 1981)a/	$2.47	$4.70	$3.43	$2.64	$4.99	$3.63	$2.85	$5.27	$3.82	$4.85	$7.10	$6.10	$5.83	$8.02	$6.94	$7.37	$6.77
EIA (Aug 1981)b/	2.62	4.76	3.33	3.09	5.24	3.81	3.57	5.72	4.40	6.31	7.74	7.14	NA	NA	NA	NA	NA
AGA (Nov 1981)c/	2.83	4.88	4.02	3.30	5.25	4.48	3.68	5.59	4.85	5.56	7.22	6.38	4.61	6.05	5.84	8.55	NA
AGA (Apr 1981)d/	NA	4.42	3.85	NA	4.92	4.43	NA	5.39	5.12	NA	6.87	6.75	NA	NA	NA	NA	NA
Bleak Harveste/	2.61	NA	NA	3.08	NA	NA	3.62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy Action (Feb 1981)f/	1.93	NA	NA	2.11	NA	NA	2.27	NA	NA	5.88	NA	NA	NA	NA	NA	8.07	NA
Loury (Apr 1981)g/	2.08	4.49	NA	2.24	4.66	NA	2.38	4.82	NA	2.67	5.16	NA	4.13	6.64	NA	5.28	5.78
Amoco (Sept 1981)h/	3.05	4.50	NA	NA	NA	NA	NA	NA	NA	3.90	6.65	NA	5.25	8.50	NA	6.20	6.95

NA = Not available.

a/ Reference case. $/Mcf.
b/ Central case. $/Mcf.
c/ Central estimate. $/MMBtu.
d/ Base case. $/MMBtu.
e/ $/Mcf.
f/ $/Mcf.
g/ $/MMBtu.
h/ $/Mcf.

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provided adequate documentation to explain their results. The OPPA study results to 1984 are considered the upper bound of a plausible range for two reasons. First, a review of their methodology indicates that for the most part, projected gas volumes and prices were appropriately computed by NGPA category, and hence serve as a reasonable benchmark. Additionally, OPPA assumed increasing amounts of deep (decontrolled) gas as well as "category creep;"[1/] thus it represents the upper bound. Energy Action increased current prices at a real rate of 9 percent through 1984, but did not provide analytical justification for the assumption.

Of greater importance to the decontrol debate is a comparison of the prices after 1984. In 1985, the average field prices range from $6.31 (EIA) to $2.67 (Loury), a difference of 136 percent. The EIA results were not explained in the study; Loury appears to have assumed a substantial lag between changes in maximum lawful prices and receipt by the producer as well as greater amounts of controlled gas than any other study. Since Loury's absolute projection for 1985 is more likely to occur in 1982 or 1983, before substantial partial decontrol, it is deemed to be unrealistic.

Between these two extremes, the average 1985 field prices under NGPA projected by the other studies range from $3.90/Mcf (Amoco) to $5.80 (Energy Action) with estimates by AGA and OPPA at $5.56/Mcf and $4.85/Mcf, respectively. Variations in key assumptions explain in part these differences. The Amoco study ties the price of decontrolled gas to residual fuel oil ($6.20/Mcf) in 1985; the studies projecting higher average prices variously tied the price of gas to an

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[1/] The alleged transfer of gas production from lower to higher priced NGPA categories.

oil equivalent price ranging from 100 percent of crude to 110 percent of wholesale distillate. Also it is apparent that the Amoco study assumed a lower proportion of decontrolled gas, although the exact amount was not stated in the study.

Energy Action assumed for 1985 that decontrolled gas prices would reach crude oil parity -- $8.07/Mcf -- and that decontrolled gas would be 65 percent of the total. AGA (November) substantially increased its estimate of decontrolled gas prices from the April study to 110 percent of wholesale distillate[1/] -- $8.55/Mcf -- and assumed that 64 percent of flowing gas would be decontrolled. OPPA, in its comprehensive study, prepared a detailed assessment of the cushion and estimated that 50 percent of Lower 48 gas would be decontrolled. Concluding that the level of decontrolled gas prices would absorb most of the cushion or essentially rise to a level that would result in a market clearing price at retail, OPPA projected the decontrolled gas price at $7.37/Mcf, or 100 percent of the wholesale distillate price.

Apart from obvious differences in estimating the cushion or the future level of oil prices, the wide range in new gas prices used in the four above described studies serve to illustrate a key issue in the decontrol debate -- "fly up," i.e., the extent to which decontrolled gas prices rise above long run market clearing levels. The potential implications of fly up are discussed at a later point; suffice it to reiterate here that fly up refers to decontrolled gas prices above market clearing levels. Amoco apparently presumes minimal fly up, while OPPA calculated the maximum level of

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1/ It is not entirely clear whether AGA's revised forecast is merely an illustration of what might happen under extreme circumstances or should be interpreted as a reflection of their current position with respect to future gas prices.

fly up and projected decontrolled gas prices accordingly. Consequently, it appears that these two studies cover the likely range of gas prices. In contrast, AGA seems to be extreme in their new gas prices, presupposing that pipelines have little interest in selling gas and would buy gas at prices which result in retail rates so high as to reduce demand well below supply.

One common feature of all the studies is that they confirm a widely held view with respect to NGPA -- it virtually guarantees a large jump in gas prices in 1985. Although NGPA was intended to bring new gas prices in line with oil in 1985, oil prices have doubled from the levels assumed at the time of NGPA enactment. It may be noted here that the chief contribution of the Mellon study to the decontrol debate was to imply, basically, that gas demand is price-elastic and that deregulated natural gas would not reach an oil equivalent price, due to interfuel competition. In other words, the market will restrain gas prices, in sharp contrast to the assumptions embodied in AGA (November), Energy Action and Bleak Harvest.

The increase in retail rates under NGPA projected by the various studies generally reflects a passthrough of the increased field prices. The following summarizes projected increases in residential gas prices.

PERCENTAGE INCREASES IN
REAL RESIDENTIAL GAS PRICES UNDER NGPA
(Excludes Inflation)

	1984 to 1985	1982 to 1985
OPPA	36%	53%
EIA	51	63
AGA (November)	29	48
AGA (April)	23	55
Loury	7	15
Amoco	NA	48

The projected percentage increases in residential rates are less than the increases in field prices because residential rates include substantial fixed costs for gas transportation, storage and distribution. A striking similarity in most of the studies (all excluding Loury) is the relatively uniform increase in residential gas prices between 1982 and 1985, varying betwen 48 to 63 percent. It appears that assumptions regarding the 1982 to 1984 period largely eliminate disparities in thinking about what happens to residential price increases between 1984 and 1985. Moreover, despite the more divergent views on what happens to field prices, the impact on residential rates is less striking because field prices are only a portion of retail rates.

Only two of the ten studies addressed the potential for regional pricing disparities under NGPA and only one in any detail. Since there is growing recognition of this NGPA feature, some discussion is appropriate before addressing the price impact of total decontrol.

The OPPA stated that under NGPA

> In part, market instability is caused by the difficult-to-resist market pressure for pipelines to bid up the price of deregulated gas until the average price at retail clears the

> market. It also is created by average rolled-in pricing at wholesale and retail.
>
> Finally, market instability is created by the NGPA's different treatment of old gas in the two markets. As a result, the interstate market is expected to have a substantially larger endowment of price-controlled gas after 1985 than the intrastate market. This uneven distribution of old gas facilitates uneven bidding prices between markets for deregulated gas. And it even is likely to produce unequal access to deregulated supplies among interstate pipelines.

The OPPA projected that under NGPA, in 1985 the average cost of field purchases to intrastate buyers would be greater by 20 percent or $0.91/Mcf more than the cost to interstate pipelines. However, due to the purchase of supplemental gas and higher transportation costs, interstate city-gate (sales from pipelines to distributors) prices would be slightly higher to interstate buyers than to intrastate buyers.

On the subject of regional disparities in pricing, AGA (November) stated:

> This problem is compounded by the fact that disparities are expected among regions and among distribution systems because gas remaining under controls will not be evenly distributed. Some regions and some distribution systems will have very little access to low cost gas, so that the average wellhead price in these regions will be much higher than in regions with larger amounts of old gas remaining under price controls. In addition, some observers fear that companies with access to larger amounts of old gas may be financially able to bid the price of new gas above competitive levels before reaching a price at which the average wellhead price (average over both new and old gas) clears the market. This means that companies with little or no old gas to cushion the effect of the bid-up of new gas prices would be at a competitive disadvantage vis-a-vis other gas distribution systems as well as competing fuels. However, since only 36 percent of

> flowing gas in the gas utility market is likely to remain under wellhead price controls by 1985, this bidding disparity problem does not appear to be a significant factor.

AGA (November) projected that the wellhead acquisition price for utilities in the West South Central Region[1] would be $1.02/Mcf or 18 percent higher than the national average in 1985 under NGPA; and that the highest regional average wellhead acquisition price would be as much as 38 percent higher than the lowest regional price in 1985.

1/ The states of Arkansas, Louisiana, Oklahoma and Texas.

Table 2

COMPARISON OF JULY 1981 AVERAGE PURCHASED GAS COSTS OF SELECTED PIPELINE COMPANIES PURCHASING GAS IN LOUISIANA
($/MMBtu)

Intrastate	
Sugar Bowl	$3.92
LIG	3.43
Monterey	2.58
Average	$3.31
Interstate	
Columbia	2.30
Consolidated	2.50
Michigan Wisconsin	2.34
Natural Gas Pipeline	1.90
Southern Natural	2.62
Texas Eastern	2.34
Transco	2.78
Trunkline	2.29
United	2.34
Average	$2.38

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There seems to be little doubt that under NGPA there will be wide differences in the average field prices paid by pipelines. Lending credence to this projection, but not generally recognized, is the fact that such differences exist now. Perhaps the most acute situation is in Louisiana, where the cost of purchased gas to most intrastate pipelines is substantially above the cost to interstate pipelines. Table 2 on the preceding page shows a comparison of interstate and intrastate average purchased gas costs in Louisiana during July of 1981.

In the composite, the foregoing studies show that under NGPA there will be a very large jump in gas prices between 1984 and 1985. Assumptions on new gas prices essentially determine the extent of regional or intercompany pricing disparities. Irrespective of the magnitude of regional pricing disparities which will be determined by the amount of fly up, there seems to be little doubt that such disparities will exist under NGPA.

With NGPA as a standard comparison, other decontrol options can be addressed. Table 3 shows price projections under phased total decontrol as contained in the ten studies. For 1985 all the studies assumed total decontrol, with the phasing beginning in 1981 or 1982. The specific means of phasing through 1984 vary somewhat among the studies but the more important issue is what happens through and by 1985; in particular, what happens in comparison with NGPA. Below is a comparison of the difference in projected average field prices among the various studies between NGPA and phased total decontrol.

Table 3

COMPARISONS OF PRICE PROJECTIONS
PHASED TOTAL DECONTROL
(1981 $/Mcf or MMBtu)

	1982			1983			1984			1985			1990			Decontrolled "New" Gas Prices Wellhead				
Study (1)	Field Price (2)	Resi-dential Price (3)	Indus-trial Price (4)	Field Price (5)	Resi-dential Price (6)	Indus-trial Price (7)	Field Price (8)	Resi-dential Price (9)	Indus-trial Price (10)	Field Price (11)	Resi-dential Price (12)	Indus-trial Price (13)	Field Price (14)	Resi-dential Price (15)	Indus-trial Price (16)	1982 (17)	1983 (18)	1984 (19)	1985 (20)	1990 (21)
Cabinet Council (July 1981)a/	$3.82	NA	NA	$4.63	NA	NA	$5.34	NA	NA	$5.50	NA	NA	NA	NA	NA	$3.82b/	$4.63b/	$5.34b/	$5.50	NA
OPPA (Nov 1981)	3.33	5.52	4.27	4.15	6.38	5.09	4.82	7.02	5.73	5.11	7.26	6.00	6.00	8.18	6.90	4.69	4.83	4.97	5.10	5.90
EIA (Aug 1981)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AGA (Nov 1981)c/	2.96	5.12	4.11	3.59	5.72	4.72	4.22	6.38	5.34	6.93	8.96	7.95	4.71	7.07	5.95	8.32	8.39	8.47	8.55	NA
AGA (Apr 1981)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bleak Harvestd/	4.05	NA	NA	5.48	NA	NA	6.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy Action (Feb 1981)e/	4.50	NA	NA	4.07	NA	NA	5.30	NA	NA	6.98	NA	NA	NA	NA	NA	7.32	7.57	7.82	8.07	NA
Lowry (Apr 1981)f/	2.48	4.76	NA	3.21	5.40	NA	4.22	6.30	NA	4.88	6.94	NA	5.67	8.05	NA	4.98	5.08	5.18	5.28	5.70
Amoco (Sept 1981)g/	2.60	5.05	NA	NA	NA	NA	NA	NA	NA	5.40	7.70	NA	6.80	9.45	NA	NA	NA	NA	6.20	6.95

NA = Not available.

1430-13-a

a/ "All new" option; assumes 70% of average crude price as target price for gas; $/Mcf.
b/ Constrained to 70% of average crude price; exludes 107 gas.
c/ Central estimate. $/MMBtu.
d/ $/Mcf.
e/ $/Mcf.
f/ "Scenario 6" - gradual lifting of ceiling prices on all gas until complete control by 1/1/85; "New" gas price is for 107 gas only; $/MMBtu.
g/ "Case IIIA" all gas gradually decontrolled from 1/1/82 to 1/1/85, $/Mcf.

1430-12-a

PERCENTAGE INCREASES IN AVERAGE FIELD PRICES: PHASED TOTAL DECONTROL VERSUS NGPA

	1982 (1)	1985[a/] (2)	1990 (3)
OPPA	35%	5%	1%
AGA (November)	5	25	2
Energy Action	132	26	NA
Loury	20	83	37
Amoco	27	38	30

a/ All studies assumed total decontrol by 1985 except Energy Action, which assumed 83% is decontrolled.

NA = Not available.

The wide differences among the studies for the year 1982 reflect variations in the trajectory of the phasing. The differences among the studies for the year 1985 reflect in large measure variations in the treatment of decontrolled prices as between partial decontrol -- NGPA -- and total decontrol in 1985. Only OPPA varied the decontrolled prices. Relating the size of the cushion to the decontrolled gas price, OPPA varied the new gas price so as to essentially (but not entirely) equalize average gas prices under different decontrol scenarios. OPPA reasoned that decontrolled gas prices will tend to fall as more gas is decontrolled. In other words, the market will keep a lid on gas prices.

The remaining four of the five above studies used the same decontrolled gas price for both NGPA and the phased decontrol scenarios. On one hand, neither Loury nor Amoco assumed any fly up under NGPA; thus, under wider decontrol, average field prices rise in step. Moreover, Loury's estimates of average field prices in 1985 under NGPA seem unduly low, well out of line with conventional views, and hence, the large increase shown under total decontrol. On the other hand, both AGA (November) and Energy Action assumed significant fly up in 1985 under essentially total decontrol. AGA (November) and Energy Action presupposed that wider decontrol expands fly up, while OPPA concluded that ultimate total decontrol with gradual phasing-in will eliminate fly up. In AGA's central case used here, the fly up problem with total decontrol is eliminated by 1988.

In developing its assumption that most decontrolled gas will rise to 110 percent of wholesale distillate, AGA (November) cites a study prepared by Decision Analysis Corporation (DAC) entitled Analyses of Natural Gas Producers/Interstate Pipeline Contracts. Based on the DAC study, AGA states that indefinite escalators in contracts "require that, upon decontrol, wellhead gas prices must rise arbitrarily to or a percentage above, some oil product price."

The DAC study showed that 67 percent of all interstate gas contracts had indefinite price escalators which would allow decontrol. The remaining 33 percent did not have contract language allowing decontrol. Of the contracts which had indefinite price escalators, 11 percent tied the decontrolled price to crude oil, residual oil or distillate. The DAC study did not mention multiples (e.g., 110 percent). Most of the remaining contracts with indefinite price escalators tied the decontrolled gas price to other gas prices. Of all the contracts with indefinite price escalators, 10 percent contained escape clauses based upon non-marketability.

From this information, AGA (November) jumps to the conclusion that under total decontrol, 60 percent of all gas would be priced at 110 percent of wholesale distillate and 40 percent at 70 percent of crude oil (assumed market clearing level). Why gas under contracts without decontrol language (33 of the 40 percent) would be priced well above contracts amounts is even more inexplicable than why 60 percent would be priced at 110 percent of wholesale distillate. The combination of the two by AGA is internally inconsistent and unsupportable. Aside from the questionable and unsupported basis to project 60 percent priced above wholesale distillate, there is at least a contract basis for this gas to rise above NGPA controlled levels. AGA's strict interpretation of contracts only applies to the 60 percent; AGA ignored contracts for 33 percent and arbitrarily assumed contracts were irrelevant for this third, and the price would rise to 70 percent of crude.

AGA seems to agree with other studies that gas would be unmarketable in many applications were their projection realized. Their proposition that pipelines will continue to buy gas at these prices (under total decontrol) and even pay in excess of contractually obligated amounts suggests an ill-founded irrationality to the pipeline industry. As indicated by OPPA, supra-equilibrium prices for some gas can only occur if there is a cushion of low priced gas to offset these purchases. In conclusion, it appears that AGA's (November) projection of gas prices under phased total decontrol is unrealisticaly high.

As shown below, all five studies projected lower percentage increases in residential gas prices than in average field prices for the phased total decontrol scenario compared to NGPA.

PERCENTAGE INCREASES IN AVERAGE RESIDENTIAL PRICES:
PHASED TOTAL DECONTROL VERSUS NGPA

	1982 (1)	1985 (2)	1990 (3)
OPPA	17%	1%	2%
AGA (November)	5	24	3
Energy Action	NA	NA	NA
Loury	6	34	20
Amoco	12	16	11

NA = Not available.

In addition to the passthrough of field prices, the projected change in residential gas prices in two of the four studies provided for changes in the level of supplemental gas supply and price as well as variations in transportation-distribution costs due to efficiency changes. AGA and Loury apparently did not make these adjustments while Amoco and OPPA did. Amoco's projection reflects assumptions that the wellhead price increase would be partially offset by gains from decontrol due to:

- increased efficiencies in gas transmission, distribution and marketing;
- replacing "high-cost, uneconomic" supply with lower cost domestic production;
- downward pressure on the price of gas imports.

Amoco assumed that all wellhead price increases would flow through to consumers in 1982, but only 80 percent of the increase would do so in 1985 and 70 percent in 1990.

OPPA also projected cost savings due to accelerated decontrol, principally a reduction in the cost of imported gas. Assuming imports would have to be priced competitively with decontrolled domestic gas, OPPA projected lower import prices under phased total decontrol because field prices would be lower than under NGPA.

Among the studies, the differences between phased total decontrol and total decontrol are negligible after 1984 but fairly substantial before then. Below is a comparison of the difference in projected average field and residential gas prices between NGPA and total immediate decontrol for the year 1982.

PERCENTAGE INCREASES IN AVERAGE FIELD AND RESIDENTIAL GAS PRICES: IMMEDIATE TOTAL DECONTROL VERSUS NGPA
1982

	Average Field (1)	Residential (2)
OPPA	85%	42%
EIA	67	35
AGA (April)	NA	71
Energy Action	274	NA
Loury	69	6
Amoco	105	29

Generally the studies show a sharp increase in gas prices under immediate decontrol. Further details are provided on Table 4.

Table 4

COMPARISONS OF PRICE PROJECTIONS
TOTAL IMMEDIATE DECONTROL
(1981 $/Mcf or MMBtu)

	1 9 8 2			1 9 8 3			1 9 8 4			1 9 8 5			1 9 9 0			Decontrolled "New" Gas Prices Wellhead				
Study (1)	Field Price (2)	Resi-dnt'l Price (3)	Indus-trial Price (4)	Field Price (5)	Resi-dnt'l Price (6)	Indus-trial Price (7)	Field Price (8)	Resi-dnt'l Price (9)	Indus-trial Price (10)	Field Price (11)	Resi-dnt'l Price (12)	Indus-trial Price (13)	Field Price (14)	Resi-dnt'l Price (15)	Indus-trial Price (16)	1982 (17)	1983 (18)	1984 (19)	1985 (20)	1990 (21)
Cabinet Council (July 1981)a/	$5.13	--	--	$5.27	--	--	$5.46	--	--	$5.60	--	--	--	--	--	$3.02	$4.63	$5.34	$5.50	--
OPPA (Nov 1981)b/	4.57	6.60	5.47	4.65	6.78		4.84	6.97	5.74	5.07	7.22	5.96	6.00	8.19	6.90	4.56	--	4.83	4.07	5.98
EIA (Aug 1981)c/	4.08	6.43	5.08	3.93	6.19	4.66	4.40	6.55	5.12	5.00	7.02	5.59	--	--	--	--	--	--	--	--
AGA (Nov 1981)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AGA (Apr 1981)d/	--	7.55	6.66	--	8.01	6.99	--	8.51	7.45	--	8.86	7.75	--	--	--	5.54	5.69	5.84	5.99	--
Energy Action (Feb 1981)e/	7.25	--	--	7.50	--	--	7.79	--	--	8.07	--	--	--	--	--	7.25	7.52	7.79	8.06	--
Loury (Apr 1981)f/	3.51	4.76	NA	4.18	5.40	NA	4.62	6.30	NA	4.88	6.94	NA	5.67	8.05	NA	4.98	5.08	5.18	5.28	5.78
Amoco (Sept 1981)g/	4.20	6.50	--	--	--	--	--	--	--	5.40	7.70	--	6.80	9.45	--	--	--	--	6.20	6.94

NA = Not available.

1430-15-a

a/ $/Mcf.
b/ Reference case; assumes full decontrol in 1982, $Mcf.
c/ Central case; assumes revocation of FUA, $/Mcf.
d/ $/MMBtu.
e/ $/Mcf.
f/ $/MMBtu. "Scenario 4" refers to complete decontrol of all gas effective 1/1/81; "new" gas is for 107 gas.
g/ "Case IV" - complete decontrol effective 1/1/82, $/Mcf.
1430-14-a

B. Gas Supply

From the foregoing discussion, it should be apparent that phased total or immediate total decontrol would result in gas prices higher than NGPA at least through 1984. The relative increase moderates beginning in 1985 to a negligible difference by 1990; the degree to which this difference moderates varies considerably among the studies. A likely benefit of these higher prices is increased gas supply; further, as Amoco and OPPA quantify, this increased domestic production will result in reduced imported gas supplies and prices with offsetting benefits on retail gas prices. It is the purpose of this section to compare and evaluate the gas supply projections made by the various studies.

Table 5 shows the gas supply projections available from several studies for various decontrol scenarios. Total gas supply, including supplemental gas, is shown as well as Lower 48 production for the years 1982-1985 and 1990.

Table 5

PROJECTED GAS SUPPLIES
UNDER VARIOUS DECONTROL SCENARIOS
(Tcf)

Projected Supplies	OPPA a/					EIA b/					Loury c/					Amoco d/				
(1)	1982 (2)	1983 (3)	1984 (4)	1985 (5)	1990 (6)	1982 (7)	1983 (8)	1984 (9)	1985 (10)	1990 (11)	1982 (12)	1983 (13)	1984 (14)	1985 (15)	1990 (16)	1982 (17)	1983 (18)	1984 (19)	1985 (20)	1990 (21)
NGPA																				
Lower 48	18.0	17.2	16.7	17.2	16.0	17.7	17.0	16.4	16.7	NA	18.2	18.0	17.9	17.6	16.8	18.0	NA	NA	16.7	17.1
Total	19.4	19.1	18.7	19.1	19.7	19.7	19.5	19.3	18.7	NA	20.0	19.9	19.8	19.6	19.6	NA	NA	NA	NA	NA
Phased Total Decontrol																				
Lower 48	18.0	17.6	17.4	17.1	16.3	NA	NA	NA	NA	NA	19.2	19.5	19.9	20.1	NA	18.2	NA	NA	18.1	18.6
Total	19.5	19.6	19.3	19.1	19.2	NA	NA	NA	NA	NA	21.0	21.4	21.8	22.1	NA	NA	NA	NA	NA	NA
Total Immediate Decontrol																				
Lower 48	18.4	17.8	17.7	17.3	16.3	17.5	17.6	17.2	16.9	NA	20.2	21.0	21.9	22.6	NA	18.3	NA	NA	18.3	18.7
Total	19.7	19.7	19.4	19.3	19.2	19.2	18.9	18.6	18.3	NA	22.0	22.9	23.8	24.6	NA	NA	NA	NA	NA	20.4
Extended Control																				
Lower 48	17.9	17.3	16.9	16.5	15.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18.0	NA	NA	16.3	15.7
Total	19.4	19.3	18.8	18.7	18.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.4

NA = Not available.

a/ Reference case; Lower 48 includes conventional and unconventional (including gas from wells deeper than 15,000 feet). Total includes Lower 48, Alaskan, imports and "other supplemental" supplies. Assumes completion of ANGTS before 1990.

b/ Central case. Assumes revocation of FUA. Total decontrol assumes decontrol in 1982. Lower 48 includes "old controlled interstate gas," "old controlled intrastate gas," and "new or decontrolled gas." Total includes Lower 48, imports, and supplemental gas.

c/ Total decontrol 1/1/81; the production estimates for 1990 were not adjusted for the additional supply response which could accompany decontrolled natural gas prices.

d/ NGPA through 1985 is based on "Natural Gas and the Natural Gas Policy Act: A Pragmatic Analysis," by Dr. Edward Erickson of North Carolina State University, referenced in the Amoco Study. Dr. Erickson's work varies assumptions of the number of successful gas well completions as a determinant of increased production. The case assuming "Moderate Increase in Successful Completions" is felt to approximate likely experience under NGPA. Amoco derived and showed only changes in gas supply. Projections exclude increased oil production which Amoco also estimated.

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The projections under NGPA assumptions show declining Lower 48 production and increasing amounts of supplemental gas. In 1985, Lower 48 production is projected to range from 16.7 Tcf (EIA and Amoco) to 17.6 Tcf (Loury). In 1990, Lower 48 production is projected to range from 16.8 Tcf (OPPA and Loury) to 17.1 (Amoco). These projections should be considered quite close considering the numerous assumptions and variables embodied in such projections.

All four studies show Lower 48 production increasing in the near term under phased or immediate total decontrol compared to NGPA. However, OPPA shows a decrease in Lower 48 production in 1990, and even by 1985 under phased decontrol, while Amoco shows a significant increase in both 1985 and 1990, compared to NGPA. The following shows a comparison of production changes for phased or total decontrol compared to NGPA.

PERCENTAGE CHANGES IN LOWER 48 GAS SUPPLY:
PHASED OR IMMEDIATE TOTAL DECONTROL
VERSUS NGPA

	1985		1990	
	Phased (1)	Immediate (2)	Phased (3)	Immediate (4)
OPPA	(0.6%)	0.6%	(3.0%)	(3.0%)
EIA	NA	1.2	NA	NA
Loury	14.2	28.4	NA	NA
Amoco	8.4	9.6	8.8	9.4

In addition, AGA (April) projected potential increases in new onshore gas production for immediate total decontrol. These increases shown below did not actually occur in their analysis because higher prices, resulting in decreased demand, were projected to lead to a surplus. Offshore production did not change from the Base Case results in this analysis. It is difficult to explain in light of this projected surplus why AGA (April) raised supplemental gas prices in their price projection. It would be more reasonable in light of a domestic gas surplus to assume downward pressure on supplemental gas supply and/or price, as OPPA and Amoco did.

POTENTIAL VOLUMES OF FLOWING NEW ONSHORE GAS
IN BASE CASE VS. IMMEDIATE TOTAL DECONTROL
(Tcf)

Year (1)	Base (2)	Decontrol (3)	Difference (4)
1	1.9	2.2	+0.3
2	2.3	2.8	+0.5
3	2.8	3.5	+0.7
4	3.2	3.8	+0.6
5	3.6	4.0	+0.4

Energy Action stated that "controlled prices are sufficient to encourage exploration by most companies." Thus Energy Action projects no difference in Lower 48 production under all decontrol scenarios. The superficial commentary by Energy Action ignores the obvious -- decontrolled prices will encourage more exploration and development by all companies.

The OPPA supply model is predicated on a positive elasticity of supply for new reserves additions, but reflects no supply response based on price changes for old (already discovered) reserves. Since OPPA projects higher new gas prices under NGPA than wider decontrol due to fly up under NGPA, OPPA projects higher Lower 48 gas supply under NGPA. Amoco, on the other hand, takes into consideration such factors as increased infill drilling due to higher gas prices, and the greater amount of capital available to producers to invest in gas exploration and development. The most significant difference between the two is less the responsiveness of gas supply to changes in old gas prices than the large fly up -- much higher new gas prices under partial decontrol -- projected by OPPA. In light of the mechanics of the model employed by OPPA, however, there would still be some lesser difference with Amoco even if OPPA assumed no fly up under NGPA.

Although it is generally agreed that new gas supply is responsive to "new" gas prices, there is less uniform opinion on the responsiveness of gas supply to changes in "old" gas prices. Certainly there appears to be a positive relationship, but quantification of the relationship has yet to be determined.

The Federal Power Commission determined on a number of occasions that gas supply would be improved by increases in old gas prices. For example, in Opinion 749 (issued December 31, 1975), the Commission stated:

> The higher price for "old gas" that we are permitting in this order will have the effect of increasing gas supplies in two ways. First, the incremental cost of recovering additional gas from any given reservoir before it is considered to be depleted is an increasing function of the proportion of total gas taken from the reservior. Generally, it will pay a producer to produce additional gas from a reservoir up to, but not beyond, the point at which the incremental cost of additional gas equals the new price that can be obtained from the gas. It follows that the higher net price that producers will receive on the basis of this order will result in some additonal production from existing reservoirs. Although we are unable to quantify the effect of the specific increase we are permitting, we believe it is likely to be material.

> Second, the additional producer revenues occasioned by this order, to the extent not required for payment of income taxes, will be available for investment in additional exploratory and developmental activity.

Total gas reserves would be enhanced by uniform pricing for all categories of gas for a number of reasons. First, as stated above, the increased revenues would be available to producers to fund additional new gas discoveries. Second, eliminating the patchwork pricing of new gas embodied in the NGPA even after 1985 would optimize incentives for producers so as to stimulate discovery. NGPA does not deregulate all new gas; for example, new gas discovered on old offshore leases is not decontrolled. Thus, the NGPA will promote underdevelopment of the likely lowest risk and lowest cost reserves. Third, higher prices for old gas will stimulate additional infill drilling, justify workovers on old gas reservoirs, and provide for longer economic lives of existing reserves as well as expand the total recovery from these reserves. Producers abandon wells when the revenue from the sales falls below the cost of maintaining production. Higher prices will justify lower abandonment pressures, prolong reservoir lives and increase recoverable reserves.

As a result of differences in the presumed response of gas supply to old gas prices, Amoco and OPPA differed substantially in opinion on the impact of total decontrol on the need for supplemental gas supply. However, Amoco addressed the question in a qualitative manner but did not provide a comparison of NGPA versus total decontrol. EIA projected a sharp decline in supplemental gas purchases -- 30 percent -- in 1985, while OPPA did not.

C. Gas Demand

None of the studies were intended to provide a thorough assessment of gas shortages; thus demand, and more particularly, a comparison of supply and demand was not comprehensively covered. Under its central case, EIA foresaw demand well in excess of conventional supply in 1985, but did not provide much more elaboration. OPPA projected unsatisfied economic demand under continuation of price controls, but under NGPA used fly up to clear the market. AGA did not cite shortages in their studies, but, as mentioned earlier, projected a surplus of domestic gas for the first five years of immediate total decontrol. For purposes of this study, Energy Action simply assumed that consumption would remain flat at 18.5 Tcf/year. Amoco provided no specific projections as to the level of demand.

Table 6 on the following page shows projected gas consumption by sector. Uniformly, the studies show lower gas consumption under total decontrol, but only AGA projected substantial reductions. In its November study, AGA projected a 19 percent decline in utility gas sales in 1990 for phased decontrol compared with NGPA. In its April study, AGA projected a 10 percent decline in utility sales in 1985 for immediate total decontrol compared with NGPA.

Table 6

PROJECTED GAS CONSUMPTION, BY SECTOR
(Tcf or QBtu)

Scenario/Sector	OPPA a/ - Consumption					EIA b/ - Consumption					AGA (11/81) c/ - Gas Sales					AGA (4/81) d/ - Util.Gas Sales				
(1)	1982 (2)	1983 (3)	1984 (4)	1985 (5)	1990 (6)	1982 (7)	1983 (8)	1984 (9)	1985 (10)	1990 (11)	1982 (12)	1983 (13)	1984 (14)	1985 (15)	1990 (16)	1982 (17)	1983 (18)	1984 (19)	1985 (20)	1990 (21)
NGPA																				
Residential	4.9	4.9	5.0	4.9	4.9	5.0	4.9	4.9	4.7	NA	8.0	8.0	8.1	8.1	8.1	5.0	5.0	5.0	4.9	NA
Commercial	2.8	2.8	2.9	2.8	2.8	2.3	2.4	2.4	2.5	NA						2.8	2.9	3.0	3.1	NA
Industrial	6.3	6.3	6.2	6.3	7.0	8.5	8.5	8.5	8.2	NA	8.6	9.0	9.0	7.6	8.9	7.9	8.5	8.5	8.8	NA
Elec. Utility	2.9	2.8	2.4	2.8	2.6	3.3	3.2	3.0	2.8	NA						1.6	1.6	1.6	1.6	NA
Total	16.9	16.8	16.5	16.8	17.3	19.1	19.0	18.8	18.2	NA	16.6	17.0	17.1	15.7	17.0	17.3	18.0	18.1	18.4	NA
Phased Decontrol																				
Residential	4.8	4.7	4.7	4.9	4.9	NA	NA	NA	NA	NA	8.0	8.0	8.0	8.0	7.9	NA	NA	NA	NA	NA
Commercial	2.7	2.8	2.7	2.8	2.8	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA
Industrial	6.5	7.1	6.7	6.4	6.9	NA	NA	NA	NA	NA	8.5	8.6	8.4	5.9	5.8	NA	NA	NA	NA	NA
Elec. Utility	3.2	2.8	2.9	2.7	2.4	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA
Total	17.2	17.4	17.0	16.8	17.0	NA	NA	NA	NA	NA	16.5	16.6	16.4	13.9	13.7	NA	NA	NA	NA	NA
Total Immediate Decontrol																				
Residential	4.5	4.6	4.7	4.9	4.9	4.9	4.8	4.7	4.6	NA	NA	NA	NA	NA	NA	4.8	4.8	4.7	4.6	NA
Commercial	2.6	2.6	2.7	2.8	2.8	2.3	2.3	2.3	2.4	NA	NA	NA	NA	NA	NA	2.8	2.9	3.0	3.1	NA
Industrial	6.8	6.9	6.8	6.5	6.8	8.2	8.1	8.0	8.0	NA	NA	NA	NA	NA	NA	6.4	6.6	6.9	7.3	NA
Elec. Utility	3.3	3.1	3.0	2.8	2.4	3.3	3.2	3.0	2.8	NA	NA	NA	NA	NA	NA	1.6	1.6	1.6	1.6	NA
Total	17.2	17.2	17.2	17.0	16.9	18.7	18.4	18.0	17.8	NA	NA	NA	NA	NA	NA	15.6	15.9	16.2	16.6	NA

NA - Not available.

a/ Tcf; phased decontrol assumes "all new option."

b/ Tcf; central case; assumes revocation of FUA. Total decontrol begins in 1982.

c/ QBtu; central estimate; "projected utility gas sales;" industrial figure is for "industrial/powerplant."

d/ QBtu; "natural gas sales by end-user."

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D. Macroeconomic Impacts

A number of the studies compared and evaluated the macroeconomic impact of phased and immediate total decontrol. Although to some extent the macroeconomic impacts projected in these studies reflected the initial assumptions or results on gas prices and supply, there was nonetheless diversity in the models used by the different studies. Even with the same inputs, the various models would likely yield different results.

It should be noted at the outset of this review that evaluating the macroeconomic impact of microeconomic changes cannot be performed with much precision, because most macroeconomic models do not take into account efficiency gains associated with decontrol. As stated by OPPA:

> These results should be interpreted with care. At best, they represent only rough approximations of the possible direction and magnitude of the effects of decontrol on inflation, real output, and employment. It is important to note that the models producing these results were not designed to analyze changes in microeconomic policy.

For example, it is intuitively obvious that the Nation as a whole is better off if as a result of more uniform pricing of gas, producers develop lower cost reserves first, moving up the supply curve as justified by market demand. The allocation of resources is optimized; resources freed up by this process are available for use by other segments of the economy. However, the numerous uncertainties coupled with the complexities involved in this economic process preclude precise results in quantifying the net benefits of the enhanced resource allocation.

Two of the studies -- OPPA and Loury -- attempted to summarize the benefits of decontrol in economic terms. OPPA estimated "net national economic benefits" -- the sum of consumer and producer surplus -- which incorporates improvements in domestic efficiency as well as savings due to reduced gas import prices. Loury estimated the benefits of more efficient resource allocation, which apparently is the same as the sum of consumer and producer surplus, and as well calculated a value for reduced dependence on foreign oil and a cost associated with the transfer of funds from consumers to producers. The OPPA estimated a net present value[1/] of the efficiency gain from 1982 to 1995 at $20 to $27 billion for phased and immediate total decontrol, respectively, compared with NGPA. The Loury estimates show a net benefit of $22 billion between 1981 and 1984, associated with total immediate decontrol in 1981.[2/] Other macroeconomic measures, GNP, employment and inflation, are discussed below.

Table 7 shows from the different studies available information on the impact of phased and immediate total decontrol on GNP compared with NGPA. Few studies dealt with the impact of ultimate decontrol on GNP; OPPA projected GNP under immediate and phased total decontrol, EIA only under immediate total decontrol, and Amoco only under phased total decontrol. OPPA projected a negative impact for three years, and a positive impact thereafter. Amoco projected an immediate positive impact, and the projections for the period beyond 1984 are far higher than OPPA. As discussed below, inputs to the model and/or major assumptions explain these differences.

1/ Discounted at 6 percent; converted to 1981 dollars from 1980 dollars.

2/ Discounted at 6 percent; stated in 1981 dollars.

Table 7

COMPARISON OF THE EFFECTS OF DECONTROL ON GNP: PHASED OR IMMEDIATE TOTAL DECONTRL COMPARED WITH NGPA

(Billions of 1981 Dollars)

	PHASED TOTAL		IMMEDIATE TOTAL	
Year (1)	OPPA (2)	Amoco (3)	OPPA (4)	EIA (5)
1982	$ (3.7)	NA	$ (9.2)	$ (12.2)
1983	(6.7)	NA	(7.3)	(14.1)
1984	(7.3)	NA	(6.0)	6.4
1985	4.2	69.0	4.2	13.3
1986	5.8	NA	5.5	NA
1987	5.5	NA	6.2	NA
1988	5.0	NA	5.5	NA
1989	5.5	NA	6.2	NA
1990	5.8	42.0	6.5	NA
1991	5.0	NA	5.8	NA
1992	5.8	NA	6.5	NA
1993	4.7	NA	7.2	NA
1994	5.8	NA	6.5	NA
1995	5.8	NA	6.5	NA

NOTE: A positive number indicates an increase over NGPA in GNP and vice versa.

OPPA stated that with respect to immediate or phased total decontrol, the early negative impact takes into account transition costs. Losses in real potential output might occur due to the costs of gas consumers adjusting to changes in the price and availability of gas. "Most important, because production processes and the existing stock of capital were designed in an era of underpriced natural gas, the adjustment to decontrolled prices may involve transition costs."[1/] After this transition period, efficiency gains and lower energy resource costs, together with expanded supplies of factor inputs, serve to raise real potential output.

While a complete explanation of the differences between Amoco and OPPA is not possible, particularly for the pre-1985 period, it appears that at best the near term impact would be neutral rather than positive and may well be negative as suggested by OPPA. In their projection, OPPA apparently incorporates "real world friction" -- a lag between policy changes and economic benefits. It takes time and the diversion of resources to correct the resource inefficiencies created by regulation. The positive gas supply response and associated economic benefits will not occur immediately with the policy changes unless such changes are correctly predicted well in advance by suppliers and consumers. This is unlikely.[2/]

1/ According to Appendix C of the OPPA study, describing the Dynamic General Equilibrium Model (DGEM) used by OPPA in projecting GNP, the impact on GNP is the sum of productivity changes and factor input changes -- labor and capital. Higher productivity and expanded factor inputs increase potential output and vice versa. In the OPPA study, the short-term declines in GNP are due to declines in productivity while the long-term increases reflect factor input changes, particularly the higher capital input that results from the higher levels of real investment permitted by decontrol.

2/ Amoco argues effectively that gas supply adjustments can occur rapidly. However, intuitively it appears that demand side adjustments are slower and are of greater concern.

OPPA and Amoco both show positive impacts of phased total decontrol after 1984; the EIA projection for immediate decontrol also shows positive benefits beginning in 1985, supporting this proposition. However, the magnitude of Amoco's benefits are far in excess of OPPA's. These differences appear to reflect OPPA's projections of lower domestic gas production and ultimate increase in oil imports, in sharp contrast to Amoco's projection of substantially increased domestic gas and oil production and corollary declines in gas and oil imports. At the heart of the wide differences is the assumed responsiveness of domestic oil and gas production to free market pricing. The positive impact on gas supply over the long run, predicted by Amoco, appears more compelling as discussed in Section B and hence the magnitude of long run economic benefits projected by Amoco appears more reasonable.

Turning to the subject of unemployment, Table 8 shows a comparison of the effect of total decontrol on the unemployment rate. Only the OPPA and Amoco studies projected unemployment under phased or immediate total decontrol. As was the case in projections of the impact on GNP, the near term impact of phased decontrol on unemployment is projected by OPPA to be negative (an increase in unemployment) but projected by Amoco to be positive (a decrease in unemployment). The positive impact projected by Amoco is over three times as great as the near term negative impact projected by OPPA. The Amoco study at one point specified that phased decontrol would result in steady increases in private employment, totaling 1.6 million jobs by 1985. Although not represented on Table 8, "Bleak Harvest" also ventured a projection of the impact of accelerated decontrol on employment, concluding that 3.4 million jobs would be lost in the 1982-1985 period. This was apparently not an independent estimate, but based on another study not reviewed here.

Table 8

COMPARISON OF THE EFFECT OF DECONTROL
ON THE UNEMPLOYMENT RATE:
PHASED OR IMMEDIATE TOTAL DECONTROL
COMPARED TO NGPA

(Percentage Point Change)

	PHASED TOTAL		IMMEDIATE TOTAL	
	OPPA		OPPA	
Year (1)	DRI a/ (2)	Amoco b/ (3)	DRI Model (4)	Wharton Model (5)
1982	0.0	(.6)/yr	0.1	0.2
1983	0.1		0.2	0.1
1984	0.2		0.2	0.0
1985	0.2		0.0	(0.3)
1986	0.0	NA	(0.1)	0.0
1987	(0.1)	NA	(0.1)	(0.1)
1988	(0.1)	NA	(0.1)	(0.1)
1989	0.0	NA	0.0	(0.1)
1990	0.0	NA	0.1	0.1

NA = Not available.

NOTE: A positive number indicates an increase in the unemployment rate and vice versa.

a/ Phased decontrol not simulated by Wharton model.

b/ Study projects change in employment of 0.6 million/year. This represents 0.57% of 1980 labor force.

It appears that the adjustment process occurs more rapidly (immediately) in the Amoco model but not in those employed by OPPA. Particularly in terms of deployment of the labor force (factor migration), it seems that there will be a lag in adjustment and temporary unemployment will result from total decontrol. It thus follows that at best the near term impact would be neutral and might well be negative as forecast by OPPA. On the other hand, the long run increases in employment due to total decontrol projected by OPPA appear understated.

On the subjects of employment and the impact on industry, the Energy Action study did not quantify the impact of decontrol. However, the Energy Action study reached a number of conclusions, including "across the country, industries will be crippled -- and many small businesses will be bankrupted -- by the sharp and unavoidable price increases" and "decontrol will cause an increase in unemployment, a decline in productivity, and a big boost to the inflation rate." Energy Action projections of the impact of decontrol on inflation are dealt with at a later point; although not along the line of traditional macroeconomic analysis previously discussed, the broad Energy Action conclusions on the subject of employment and the impact on industry merit some comment while on the subject of employment and GNP.

The Energy Action study describes the economic consequences of decontrol as follows:

> Higher fuel costs squeeze family budgets, with the result that individuals must reduce their spending, particularly for consumer goods sold in retail stores. Discretionary spending is curtailed. As a result, retail stores faced with reduced sales must reduce orders from suppliers and wholesalers, who in turn reduce orders from manufacturers.

Thus, the study concluded that this "leads to -- ...closed plants and laid-off workers." While it should be apparent that the dire economic consequences depicted above reflect in part the exaggerated notion of the gas prices under ultimate total decontrol, some explanation of the mechanics of the macroeconomic process is justified.

Funds transferred between consumers and gas producers do not vanish as might be inferred from the Energy Action hypothesis. No matter what the disposition of the revenues received by the producers, the dollars will find their way back into the flow of the economy. For example, if gas producers reinvest their increased revenues in the petroleum industry for exploration and development, then industries such as the drilling equipment industry will experience increases in demand. Skilled labor in the petroleum industry and its suppliers will command high wages and, hence, carry increased purchasing power. Royalty owners, including the public through the Federal government (dealt with subsequently), will also experience increases in revenues. If the gas producers invest in other industries, suppliers to these industries, as well as the industries themselves receiving the funds, will benefit. In fact, if the gas producers simply invested their revenues from accelerated decontrol in the financial markets, interest rates could decline, aiding such interest-rate-sensitive industries such as real estate or even the automotive industry.

Thus, there should be little significance attached to Energy Action's claims that rather than re-investing additional revenues in exploration and development, producing companies will "expand into alternative, competing forms of energy, acquire competing energy resource firms and invest in costly, capital intensive projects to synthesize gas from coal." Were this unfounded prediction to be borne out, the economy would still experience the benefits of the increased investment. A meaningful economic analysis as attempted by OPPA, Amoco and EIA takes these factors into consideration.

For the longer term, the OPPA model has positive benefits for phased decontrol, but of an insufficient magnitude to offset the short-term increases in unemployment. Amoco has taken into consideration improved gas supply and a substantial improvement in resource allocation, which suggest long run benefits far greater than projected by OPPA.
In light of the difficulties in quantifying the macroeconomic benefits of microeconomic changes, a factor agreed

upon by all the studies, little weight can be placed on the level of long run employment benefits projected by OPPA. Common sense would dictate a greater (but virtually immeasurable with precision) positive benefit consistent with the other economic advantages projected by Amoco.

The next table shows the impact of ultimate total decontrol on measured inflation. All of the studies which projected inflation used the Consumer Price Index (CPI) except OPPA, which used the GNP deflator. A review of the table reveals unanimity among the projections for the first time as to the near term effect of ultimate total decontrol on measured inflation -- upward. Under phased decontrol, Amoco projects an annual increase of 0.3 percent per year from 1982 to 1985, in line with Loury[1/] and OPPA. Energy Action has a sharp increase (2.4 percent) in the first year, reflecting their projection of gas prices in the first year of an accelerated decontrol program. Energy Action's notion of accelerated decontrol is predicated on a phasing program quicker than the other studies so it is not directly comparable. Moreover, Energy Action's projection of the price of decontrolled gas under a total decontrol program is beyond the pale of reason and, hence, the projection of the first year impact on inflation can be given little weight. "Bleak Harvest" -- again not represented on the table -- stated generally that the previously mentioned employment loss would add 2 to 3 points to the inflation rate.

[1/] As stated previously, Loury appears low in his forecast of gas prices under NGPA, phased decontrol and total immediate decontrol. Comparing ultimate total decontrol with NGPA, however, the disparities offset each other.

Table 9

COMPARISON OF THE EFFECT OF DECONTROL ON INFLATION:
PHASED OR IMMEDIATE TOTAL DECONTROL COMPARED WITH NGPA
(Percentage Point Difference) a/

	PHASED TOTAL				IMMEDIATE TOTAL					
					OPPA					
Year (1)	Amoco (2)	Loury (3)	OPPA (DRI) (4)	Energy Action (5)	(DRI) (6)	(Wharton) (7)	Loury (8)	EIA (9)	Energy Action (10)	AGA (April) (11)
1981	NA	0.07	NA	2.43	NA	NA	0.56	NA	4.68	NA
1982	.3/yr	0.26	0.2	(0.11)	1.4	2.5	0.60	1.9	(0.06)	3.4
1983		0.44	0.8	(0.01)	0.7	0.4	0.28	0.6	(0.08)	NA
1984		0.54	0.8	0.02	0.1	0.2	0.09	(0.2)	(0.06)	NA
1985		NA	(0.9)	(1.86)	(0.9)	(2.0)	NA	(1.5)	(2.28)	NA
1986	NA	NA	(0.7)	NA	(0.9)	(0.5)	NA	NA	NA	NA
1987	NA	NA	(0.1)	NA	0.1	(0.3)	NA	NA	NA	NA
1988	NA	NA	(0.1)	NA	0.1	0.0	NA	NA	NA	NA
1989	NA	NA	0.0	NA	(0.1)	(0.2)	NA	NA	NA	NA
1990	NA	NA	0.0	NA	(0.1)	(0.2)	NA	NA	NA	NA

NA = Not available.

a/ OPPA figures are differences in the GNP deflator, all others are difference in CPI.

NOTE: A positive number indicates an increase in the inflation indices and vice versa.

Ignoring the magnitude of the Energy Action projection, it serves to show the general thrust of all the forecasts -- increases in inflation will occur early on, compared with NGPA, and then be followed by declines in the CPI year-to-year change. Whether NGPA, immediate total decontrol or phased decontrol, there will be an increase in measured inflation; the only question is one of timing.

The table also shows the range of views on the impact of total immediate decontrol on inflation. The likely range of first year impact projected by OPPA -- 1.4 to 2.5 percentage point increase -- is reasonable as it is based on a credible projection of gas prices under NGPA and total decontrol. In contrast, Energy Action and AGA have a built-in fly up under total decontrol, despite the fact that total decontrol is foreseen by other studies to eliminate fly up. Consequently, these two projections are believed overstated.

Table 10 below shows the impact of ultimate total decontrol on energy imports. Amoco and EIA took into consideration both oil and gas imports; the other studies only projected crude oil imports.

Table 10

COMPARISON OF THE EFFECT OF DECONTROL ON ENERGY IMPORTS: PHASED OR IMMEDIATE TOTAL DECONTROL COMPARED TO NGPA

(Thousands of Barrels per Day)

	PHASED TOTAL		IMMEDIATE TOTAL				
Year (1)	Amoco a/ (2)	OPPA (3)	OPPA (4)	Loury (5)	EIA a/ (6)	AGA (April) (7)	Amoco a/ (8)
1981	NA	NA	NA	700.0	NA	NA	NA
1982	150.0	505.5	487.2	1400.0	670.0	(800.0)	240.0
1983	NA	787.5	559.9	2100.0	670.0	(800.0)	NA
1984	NA	891.7	617.4	2800.0	670.0	(800.0)	NA
1985	1000.0	355.8	76.8	NA	670.0	(800.0)	1200.0
1986	NA	237.0	46.9	NA	NA	NA	NA
1987	NA	144.7	(157.7)	NA	NA	NA	NA
1988	NA	50.2	(120.9)	NA	NA	NA	NA
1989	NA	23.8	(166.6)	NA	NA	NA	NA
1990	1100.0	(0.6)	(186.4)	NA	NA	NA	1200.0
1991	NA	(19.7)	(137.6)	NA	NA	NA	NA
1992	NA	(57.2)	(187.5)	NA	NA	NA	NA
1993	NA	(32.8)	(122.7)	NA	NA	NA	NA
1994	NA	(30.7)	(204.5)	NA	NA	NA	NA
1995	NA	(23.8)	(197.9)	NA	NA	NA	NA

NA = Not available.

a/ Includes crude oil equivalent of gas imports.

NOTE: A positive number indicates a decrease in imports and vice versa.

Under phased decontrol, Amoco and OPPA both projected substantial overall reductions in oil imports although Amoco's figures are much higher than OPPA's, beginning in 1984. In fact, OPPA projects, under phased decontrol, a modest increase in imports beginning in 1990. The wide disparities between OPPA and Amoco reflect a number of considerations. First and probably foremost, Amoco projected a substantial increase in Lower 48 production after 1985, compared to NGPA, while OPPA projected Lower 48 production to be lower under total decontrol than NGPA. Therefore, Amoco has greater gas supply displacing imports. Second, Amoco projected reduced gas imports; OPPA projected lower imported gas prices but not volumes under total decontrol. Thirdly, Amoco alone in all the studies addressed the impact of higher average gas prices on oil production, finding that higher prices for gas, found in conjunction with or dissolved in oil (associated-dissolved gas), would spur additional oil production.

As stated a number of times previously, it is believed that decontrol of old gas would result in greater gas supply, and hence the Amoco projections have directional appeal. The level of import savings after 1985 is arguable but most certainly savings should exist.

Amoco and OPPA were the only studies to deal with the impact of phased decontrol on imports. These two and others [Loury, EIA and AGA (April)] also dealt with immediate decontrol. Under immediate total decontrol, four of the five studies projected substantial reductions in energy imports, at least through 1985. Only AGA projected an increase in oil imports under total decontrol, which bears some comment. The question arises as to why the majority of studies show decreases in oil imports with higher gas prices, when oil and gas compete in end-use markets. For example, the AGA study (April) projected a decline in industrial gas demand,

and assumed this to be offset by oil use. However, this is difficult to explain since apparently AGA's projected retail gas prices were below projected retail oil prices.

Apart from this anomaly, the foregoing question suggested by the AGA results was answered by OPPA:

> Some observers have argued that accelerated gas decontrol, by increasing delivered natural gas prices above oil prices, may induce industrial and electric utility gas customers to switch to oil, thus increasing oil imports. Simple logic argues that accelerated gas decontrol will probably reduce oil import levels between now and 1985, and, at worst, will not change oil import levels.
>
> If accelerated gas decontrol increases gas prices at the margin, increased gas supply will be available from two sources: increased production in response to higher prices and increased conservation by existing gas users in response to higher average prices. This increased gas supply will, in all likelihood, be used in the industrial and electric utility sectors to displace imported oil. If gas prices initially rise so high that industrial and electric utility gas users switch to oil, gas prices will be forced down by the activities of producers trying to sell their now excess gas supplies.
>
> If there is no "excess demand" for gas by oil-users in the industrial and electric utility sectors, gas prices cannot rise because there is no "pent up" demand for the additional gas supplies created by higher prices. If accelerated gas decontrol does not increase gas prices, there will be no change in gas supply, demand or in oil import levels as a result of decontrol.
>
> The final market clearing price for gas will probably be set by the balancing between the gas supplies (both from conservation and from increased production) which are available at oil-equivalent prices and the quantity demanded at oil-equivalent prices. To the extent that these new market clearing prices are higher than existing gas prices under current policy prior to 1985, oil import levels are likely to be reduced.

More important in terms of long-term import savings is the fact that in boilers, gas and oil compete with coal. Gas prices below oil prices discourage coal use. Total decontrol will result in increased coal usage in boilers and decreased gas and oil use. Thus, this will increase the availability of gas to displace oil use in applications other than large boilers.

Another factor assessed by a number of the studies was the impact of ultimate total decontrol on producer revenues. Table 11 on the next page shows gross and net (after tax) revenues of gas producers for ultimate total decontrol, compared with NGPA. In reviewing this table, it should be noted that the gross producer revenues projected by any one study are directly related to the average field prices projected for NGPA and phased or immediate total decontrol. Thus, Energy Action with relatively low prices projected for NGPA and astronomical prices projected for total decontrol predicts the largest (over twice the closest forecast) gross transfer to producers through 1984. On the other extreme, OPPA projects very little difference between total or NGPA decontrol, beginning in 1985, because it is stated that due to fly up, there will be little difference in average field prices. Amoco, with no fly up under NGPA, is surprisingly close to Energy Action in terms of gross producer revenues for the year 1985.

Since OPPA and Amoco represent the extremes in terms of fly up, but otherwise have presented the more credible showings on gas pricing, the answer probably lies somewhere in-between the results of these two studies.

Table II

COMPARISON OF THE EFFECT OF DECONTROL ON PRODUCER REVENUE:
PHASED OR IMMEDIATE TOTAL DECONTROL COMPARED WITH NGPA
(Billions of 1981 Dollars)

	PHASED TOTAL								IMMEDIATE TOTAL											
	Energy Action		OPPA		Amoco		AGA (Nov)		Energy Action		OPPA		Amoco		AGA (Apr)		Loury		EIA	
Year (1)	Gross (2)	Net (3)	Gross (4)	Net a/ (5)	Gross (6)	Net (7)	Gross (8)	Net (9)	Gross (10)	Net (11)	Gross (12)	Net a/ (13)	Gross (14)	Net (15)	Gross (16)	Net (17)	Gross (18)	Net (19)	Gross (20)	Net (21)
1981	$50.8	NA	NA	NA	NA	NA	NA	NA	$96.2	NA	NA	NA	NA	NA	$66.8	NA	$8.8	$4.1	NA	NA
1982	47.5	NA	$15.5	$7.3	$9.8	$4.4	$2.2	NA	98.3	NA b/	$39.5	$18.6	$42.2	$19.0	59.8	NA	22.2	10.3	$31.9	NA
1983	62.3	NA	27.8	13.1	NA	NA	4.0	NA	99.9	NA	37.9	17.8	NA	NA	55.0	NA	27.9	13.0	2.4	NA
1984	56.1	NA	34.3	16.1	NA	NA	7.2	NA	102.1	NA	35.4	16.6	NA	NA	47.1	NA	29.7	13.8	3.0	NA
1985	23.7	NA	4.3	2.0	28.7	12.0	13.4	NA	43.6	NA	4.6	2.1	46.7	21.0	20.5	NA	NA	NA	(28.6)	NA
1986	NA	NA	2.9	1.4	NA	NA	6.2	NA	NA	NA	3.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA
1987	NA	NA	1.2	0.6	NA	NA	1.7	NA	NA	NA	1.3	0.6	NA	NA	NA	NA	NA	NA	NA	NA
1988	NA	NA	1.0	0.5	NA	NA	(2.0)	NA	NA	NA	1.1	0.5	NA	NA	NA	NA	NA	NA	NA	NA
1989	NA	NA	0.4	0.2	NA	NA	(1.4)	NA	NA	NA	0.3	0.1	NA	NA	NA	NA	NA	NA	NA	NA
1990	NA	NA	0.0	0.0	24.4	11.0	(1.5)	NA	NA	NA	(0.3)	(0.1)	48.9	22.0	NA	NA	NA	NA	NA	NA
1991	NA	NA	0.2	0.1	NA	NA	NA	NA	NA	NA	0.0	0.0	NA	NA	NA	NA	NA	NA	NA	NA
1992	NA	NA	(0.5)	(0.2)	NA	NA	NA	NA	NA	NA	(0.7)	(0.3)	NA	NA	NA	NA	NA	NA	NA	NA
1993	NA	NA	0.0	0.0	NA	NA	NA	NA	NA	NA	(0.1)	(0.1)	NA	NA	NA	NA	NA	NA	NA	NA
1994	NA	NA	0.8	(0.4)	NA	NA	NA	NA	NA	NA	0.6	0.3	NA	NA	NA	NA	NA	NA	NA	NA
1995	NA	NA	0.6	(0.3)	NA	NA	NA	NA	NA	NA	0.4	0.2	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not available.

a/ Tax rate used is 53 percent.

b/ No tax rate is specified. According to Energy Action, "...it is not unreasonable to assume that only a very small portion of the wellhead price increase would flow to the Federal government."

1432-5-J

In terms of net (after tax) transfers all of the studies except Energy Action recognized that a substantial portion of the increased producer revenues will be actually received by government, particularly the Federal government, through royalties, severence and income taxes. Common sense suggests that only a portion of the gross incremental revenues resulting from higher field prices will actually be available to producers due to increased taxes. DOE projects an average of 47 percent; Amoco projects 45 percent; Loury projects 46 percent; Energy Action an unknown but presumably much larger portion.

Thus, as shown on Table 12, a large amount of money will go to the Federal government, thereby reducing projected deficits. However, there may be some offsetting losses in government revenues, particularly in the near term, so these data should be interpreted with care. Among the studies, only Amoco evaluated the impact of decontrol on the Federal deficit. Amoco estimated that accelerated decontrol would reduce the borrowing needs of the Federal government by as much as $44 billion through 1985.

Table 12

• COMPARISON OF THE EFFECT OF DECONTROL ON GOVERNMENT REVENUES: a/ PHASED OR IMMEDIATE TOTAL DECONTROL COMPARED WITH NGPA

(Billions of 1981 Dollars)

Year (1)	PHASED DECONTROL Amoco (8)	OPPA (9)	Energy Action (10)	AGA (Nov) (11)	IMMEDIATE DECONTROL Amoco (2)	OPPA (3)	Loury (4)	Energy Action (5)	EIA (6)	AGA (Apr) (7)
1981	NA	NA	NA	NA	NA	NA	4.7	NA	NA	NA
1982	5.4	8.2	NA	NA	23.2	20.9	11.9	NA	NA	NA
1983	NA	14.7	NA	NA	NA	20.1	14.9	NA	NA	NA
1984	NA	18.2	NA	NA	NA	18.8	15.9	NA	NA	NA
1985	14.7	2.3	NA	NA	25.7	2.5	NA	NA	NA	NA
1986	NA	1.5	NA	NA	NA	1.5	NA	NA	NA	NA
1987	NA	0.6	NA	NA	NA	0.7	NA	NA	NA	NA
1988	NA	0.5	NA	NA	NA	0.6	NA	NA	NA	NA
1989	NA	0.2	NA	NA	NA	0.2	NA	NA	NA	NA
1990	13.4	0.0	NA	NA	26.9	0.2	NA	NA	NA	NA
1991	NA	0.1	NA	NA	NA	0.0	NA	NA	NA	NA
1992	NA	0.3	NA	NA	NA	(0.4)	NA	NA	NA	NA
1993	NA	0.0	NA	NA	NA	(0.0)	NA	NA	NA	NA
1994	NA	0.4	NA	NA	NA	(0.3)	NA	NA	NA	NA
1995	NA	0.3	NA	NA	NA	(0.2)	NA	NA	NA	NA

NA = Not available.

a/ Includes governments of all levels; primarily Federal receipts.

1432-4-j

E. Impact on Agriculture

"Bleak Harvest" examined the impact of accelerated decontrol of natural gas on farmers, concluding that accelerated decontrol of natural gas would add $1.5 billion to farm production costs in 1982, rising to $2.8 billion in 1983 and $3.9 billion in 1984. These estimates reflect both the direct farm use (excluding heating) of natural gas as well as the use of natural gas in fertilizer production. This particular section evaluates the study, it being the only one to focus on one particular consuming sector and it exemplifies some of the misconceptions concerning the real issues regarding NGPA vis-a-vis phased decontrol.

The estimates contained in "Bleak Harvest" reflect, in large measure, the projections of average field prices under NGPA and phased decontrol contained in the study. It has previously been shown that the projected average field prices under phased decontrol contained in "Bleak Harvest" are way out of line with other estimates. Moreover, the projected cost impact on ammonia producers (natural gas representing 70-80 percent of the cost of producing ammonia) provides a good opportunity to illustrate the intrastate/interstate price disparity problem. The intrastate situation under phased decontrol projected by "Bleak Harvest" by reference to the impact on electric utilities, particularly in Texas and Oklahoma, is similarly out of line with conventional thinking.

The table below shows the average field prices projected by "Bleak Harvest." It could not be determined for certain whether the forecast was in current or constant dollars, so it has been assumed that they were expressed in current (including inflation) dollars. Whether the estimates under accelerated decontrol are in current or constant dollars, the prices seem way out of line with the estimates under phased decontrol made in other studies. For example, in 1984 (the year prior to the completion of the acceleration or phasing of decontrol) the prices are above most estimates of market clearing prices. The study provided no explanation of the particulars of the acceleration process; hence, it may be that "Bleak Harvest" presumes a more rapid phasing than other studies. Nonetheless, prices appear to be too high, and in large measure, they determine the other results contained in the study.

AVERAGE FIELD PRICES
PROJECTED BY BLEAK HARVEST
($/Mcf)

	Presumed Current Dollars [a]		Estimated Constant 1981 Dollars [b]	
Year (1)	NGPA (2)	Accelerated Decontrol (3)	NGPA (4)	Accelerated Decontrol (5)
1982	2.90	4.50	2.61	4.05
1983	3.80	6.75	3.08	5.48
1984	4.95	9.00	3.62	6.58

[a] Projection set out on Pg. 4 of the study.

[b] It has been assumed that the overall inflation rate was 11 percent, which is the rate incorporated in the Energy Action study.

1432-8-j

However, the projected impact on farm heating costs does not emulate from the foregoing figures. Rather it is based on another study by the Citizen Labor Energy Coalition entitled "Gas Bill Blues: A Survey of Winter Gas Heating Costs," dated September 28, 1981. In that particular study the average residential heating gas price was assumed to increase to $7.56/Mcf in the 1982-83 winter, compared with $3.84/Mcf in the 1980-81 winter. Based upon this other study, "Bleak Harvest" stated that farm heating costs would rise by 97 percent. However, "Gas Bill Blues" does not adequately explain its concept of accelerated decontrol either, and does not provide estimated field prices incorporated in the residential gas rates. "Gas Bill Blues" did indicate that it had assumed a $60/bl. oil price in December, 1984, and that the wellhead price of gas under accelerated decontrol would increase in equal amounts each month between November 1 and December, 1984, towards oil parity.

Turning back to "Bleak Harvest," the study predicted that under accelerated decontrol the price of nitrogen fertilizer to the farmer would increase to $375/ton in 1982, $500/ton in 1983 and $620/ton in 1984. Again, it is believed that these are in current dollars. The following table puts these estimates on a constant 1981 dollar basis, and shows that even with the gas prices presumed by "Bleak Harvest" there were substantial unaccounted for increases in the cost of fertilizer to the farmer contained in the "Bleak Harvest" estimates which cannot be attributed to their forecast of increased gas prices.

Table 13

COMPONENTS OF THE PRICE OF NITROGEN FERTILIZER
CONTAINED IN BLEAK HARVEST

($/Ton to Farmer)

Cost/Year (1)	Fertilizer Price NGPA (2)	Fertilizer Price Accelerated Decontrol (3)	Difference a/ (4)	Difference Due to Natural Gas Cost b/ (5)	Unexplained Difference c/ (6)
A. Presumed Current Dollars					
1982	$ 275	$ 375	$ 100	$ 58	$ 42
1983	325	500	175	107	68
1984	390	620	230	147	83
B. Estimated Constant 1981 Dollars					
1982	240	330	90	52	38
1983	264	406	142	87	55
1984	285	453	168	107	61

a/ Column (3) - (2).

b/ 36.3 (Mcf/ton cited in Bleak Harvest) times increase in gas cost.

c/ Column (4) - (5).

1432-9-j

Column (5) on the table shows the difference in fertilizer prices due to accelerated decontrol and the increase in natural gas costs determined by reference to the "Bleak Harvest" study. Column (6) shows the unexplained difference, the amount of increase over the portion which can be attributed to gas costs. These unexplained increases in the price of fertilizer are ignored here. In real terms Bleak Harvest is showing an increase in the price of fertilizer to the farmer of $52/ton in 1982, $87/ton in 1983 and $107/ton in 1984; these numbers have been determined by reference to the Bleak Harvest study as the difference between the cost of gas to ammonia producers under NGPA and accelerated decontrol for these years. Using as a base the cost of nitrogen fertilizer delivered to farmers in 1981 at $248/ton, the projected 1984 increase of $107/ton due to accelerated decontrol would add 43 percent to the cost of nitrogen fertilizer to the farmer.

However, not recognized in the "Bleak Harvest" study is the fact that the source of over 60 percent of natural gas based nitrogen fertilizer production is intrastate.[1] A number of these fertilizer producers support total decontrol because it will decrease their cost of natural gas relative to the NGPA. Some ammonia producers in the intrastate market currently have very low cost gas, based upon very old fixed-price contracts with gas producers; until the contracts expire, their costs will be unaffected by decontrol. However, a number of others are paying standard industrial rates, charged by intrastate pipelines, who, as previously exhibited, are generally paying more for gas than interstate pipelines. Those ammonia producers with fixed-price contracts are not going to be affected by accelerated decontrol except that, upon the ultimate expiration of their contracts,

---

1/ The Fertilizer Institute, "Energy Use Survey CY 1979," August, 1980.

they will probably be able to acquire gas at a cheaper price than under NGPA.[1] The OPPA study projected that, on an absolute basis, intrastate gas prices would be lower under total decontrol than partial decontrol, as did AGA. This is also a commonly held view of many parties in the intrastate gas market. Thus, it appears that rather than astronomically increasing the price of nitrogen fertilizer to the farmer, ultimate total decontrol would likely reduce fertilizer prices after 1984.

Similarly, the price of gas to electric utilities in the intrastate market might also be reduced by total decontrol. As for California, where "Bleak Harvest" points out significant amounts of gas are used by electric utilities, total decontrol would probably raise gas prices but not to the extent suggested by "Bleak Harvest." First, at the price of gas projected by "Bleak Harvest," the utilities would find residual fuel oil cheaper. Second, as indicated by OPPA, total decontrol would reduce the price of imported gas. California uses large amounts of Canadian gas and is the prospective recipient of large amounts of Indonesian LNG.

1/ It is believed that most of these fixed-price contracts expire by 1986.

V. Glossary

Ultimate total decontrol — either phased or immediate total decontrol as defined below.

Phased total decontrol — simultaneous decontrol of all gas by a future date certain.

Immediate total decontrol — simultaneous decontrol of all gas immediately.

Measured inflation — inflation measured by standard indices such as the consumer price index.

Intrastate market — primarily the major gas producing states where substantial amounts of gas reach the ultimate consumer without passing through interstate pipelines regulated by the FERC.

Fly up — a price of decontrolled gas above market value due to the existence of low (below market) priced gas.

Spike — a large sudden increase in gas prices as significant quantities of gas are decontrolled.

MBD — thousands of barrels per day.

Contract ratchet — domino effect of indefinite price escalators.

Before The

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

TESTIMONY OF GORDON GOOCH

On Behalf Of

THE PETROCHEMICAL ENERGY GROUP

March 23, 1982

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INTRODUCTION

My name is Gordon Gooch of Baker & Botts. I have been asked by the Petrochemical Energy Group to articulate, as best that I personally can, the concerns of some of the industrial users of natural gas, with particular emphasis on the concerns of the independent petrochemical industry, since petrochemicals use natural gas as a feedstock, as a process fuel, and as plant protection fuel, as well as general fuel uses. The concerns are nationwide concerns. While there are regional disparities and concerns, these concerns must be viewed in the context of the overall nation-wide natural gas situation.

SUMMARY OF PRIOR TESTIMONY

Prior hearings of this Committee or a Subcommittee during this Congress have focused on consideration of the Fuel Use Act 1/ and on implementation of Title I of the NGPA. 2/ The testimony of the Petrochemical Energy Group at those hearings will not be reiterated in detail here, but is incorporated by reference.

I also take the liberty of calling attention to testimony that I recently gave as a Committee Witness for a subcommittee of the Joint Economic Committee in which I attempted to discuss the "gap" and the "cushion" problems, as well as the "present" problem under the Natural Gas Policy Act. 3/

PEG's testimony last spring demonstrated that all aspects of the National Energy Acts of 1978, including the Natural Gas Policy Act, should be considered together. To change only one aspect of the equation between controls on the available supply, including price controls, or the demand controls can make the existing situation worse rather than better. This point is equally valid today, when some are calling for partial changes in the NGPA, singling out the so-called "contract problem" for separate resolution.

PEG's testimony last fall before this Committee demonstrated the concern for gas supply, the problems caused by the many disparate pricing categories in Title I of the Natural Gas Policy Act, the current market disordering problems as demonstrated by the Section 107 deregulated gas problems and the off-system sales problems, and examined the problem of the anticipated market disorder after January 1985. Also covered were the problems in Title I relating to allocation and contract controls. This testimony demonstrates that the NGPA does not yield a stable gas situation, now or in the future.

VIEWS ON DECONTROL OF NATURAL GAS

By letter of December 7, 1981, 4/ the Chairman of this Committee directed questions to witnesses and in response, the Petrochemical Energy Group filed answers and supporting tables on January 8, 1982. 5/ Among the questions were, "Do you support any amendments to the NGPA? If so, please describe in detail what you advocate." I have included the entire answer to that question, filed by the Petrochemical Energy Group, as Appendix A to this testimony. 6/

In sum, PEG does believe that the NGPA needs to be amended to deregulate all natural gas by a single date.

The same question was asked of the National Association of Manufacturers, the Chemical Manufacturers Association, and the Process Gas Consumers who responded in favor of gas decontrol. 7/ The position of the Chamber of Commerce of the United States and The Business Roundtable also favors gas decontrol. 8/

WHY USERS SHOULD SUPPORT DECONTROL OF NATURAL GAS

One might well ask, why would users want to pay arguably higher prices for natural gas?

The short answer, in my view, is that they do not want to pay "higher" prices; they want to pay the lowest possible competitive price consistent with maintaining the optimum supply, and they believe that deregulation of gas will more likely achieve that result than either the NGPA as is or tinkering with the NGPA in order to reimpose controls.

There is a certain lack of confidence in the ability of the federal government to supervise the drilling programs of all producers of gas, to oversee the allocation of gas supply among pipelines and markets, and to control the end uses of gas.

Yet, that is what the NGPA and related legislation do, as I will demonstrate today as a witness for the Petrochemical Energy Group, a witness whose duty it is to communicate to you some of the fears, the frustrations, and the concerns about the natural gas situation. Evidence that has become available subsequent to the last hearing of this Committee serves only to increase the apprehension. 9/

The goal of any legislation dealing with natural gas, whether presently enacted or to be enacted, should be to assure consumers in any State that they or their suppliers will have equal access to all gas supplies in the gas fields wherever they are, subject only to contracts and fair competitive considerations, but not subject to the whims of federal regulation. 10/

Not only do the Natural Gas Policy Act and related legislation fail to achieve this goal by a wide margin, but the existing legislation seems doomed inevitably to lead to chaos in 1985, if not sooner. 11/

THE STATUS QUO THREATENS BOTH SUPPLY AND PRICE OF NATURAL GAS

An industrial consumer, particularly an industrial consumer that must have natural gas for some or all of its requirements, be it for a raw material, as in a feedstock use, or in a sophisticated fuel use, such as process, or plant protection, must ask two basic questions. First, is my gas supply secure? Will I be able to afford the cost of that gas supply and still remain competitive in both national and world markets? Applying these two basic questions to the present natural gas situation, the answers are clearly negative.

I wish to discuss the reasons why this is so.

(1) Overall Supply.

The industrial user cannot lightly disregard the warnings of the Energy Information Administration contained in its official report to Senator Metzenbaum. 12/ That report warned that under the Natural Gas Policy Act as it presently exists, there is risk that this nation will return to gas shortages prior to 1985. 13/ The users are aware that there are competing projections, including the very optimistic projections made by certain groups who appear to be advocates of maintaining low price controls on currently regulated gas. 14/ The users are also aware of the projections sponsored by the Natural Gas Supply Association which indicate an increase in overall gas supply upon decontrol. 15/ The study commissioned by the Chemical Manufacturers Association is particularly good. That study, prepared by Foster Associates, Inc., is "A Comparison and Appraisal of Ten Natural Gas Deregulation Studies", and it merits your consideration.

While this short list does not purport to exhaust the projections made by governmental and nongovernmental organizations, the warnings of EIA cannot be ignored, nor can the decline of the ratio of natural gas reserves to market requirements be obscured by some extrapolation from current drilling statistics. 16/

(2) Allocation and interdiction of available gas supply.

But in a sense, the debate over the overall level of reserves and production, both present and projected into the future, is, in reality, a secondary concern. Even if one were to assume that the present levels of production will be maintained or even increased for the next ten or more years, 17/ the question of the security of supply for the ultimate consumer is not answered. It is not answered because the biases and anomalies in the Natural Gas Policy Act and related legislation set up a series of artificial barriers which serve to allocate gas supply, both in the field, and in the pipeline and delivery systems. I would like to review some of these with you.

(a) In the gas fields--

(i) at the producer level

The federal government is the silent, and controlling, partner of every person, firm, or corporation, who seeks to increase gas supply in this country. The federal government influences, if not directs, the behavior of those who drill for gas in many ways. Among them are--

By maintaining a significant differential between the price of hydrocarbons found in a liquid form and hydrocarbons found in a gaseous form, the government provides more incentive to drill for oil than to drill for gas. 18/

By actually setting price differentials on various categories of gas, 19/ the federal government even influences where those who do seek gas will drill. In our plants, as well as in our homes, our equipment cannot distinguish between gas found on-shore and off-shore, or gas found above or below 5,000 feet, or gas found below 15,000 feet, or gas from tight sands, or gas from a new on-shore production well, or newly discovered gas, or from any kind of stripper well, or any other kind of well, whether developmental or exploratory. What the user and consumer wants is gas, and what the user and consumer should want is for the producer, in the exercise of his own enlightened self-interest, to take whatever risks are necessary to find the most gas as cheaply and efficiently as the producer possibly can. But that is not what happens. The producer, facing an array of price ceilings compelled, induced, or permitted by the Federal Government, an array that varies from about $0.40 20/ to about $10 an mcf, 21/ must consult his lawyer as well as his geologist before deciding what to do.

The NGPA encourages prices in the high range by providing maximum incentives for gas found below 15,000 feet. 22/ With the lesser NGPA ceiling prices being applicable to all depths drilled to less than 15,000 feet, one question before the FERC then becomes, should other zones be established in order to induce more drilling by depth? So, as it stands now, the FERC will have to decide whether the federal government does or does not want to encourage more drilling in the intermediate zones. 23/ This is but one illustration of the broad range of issues which will, of necessity, confront the FERC.

(ii) at the pipeline level

Not only does the federal government, through the NGPA, influence how the producer will act in exploring for and developing gas supplies through the use of different price ceilings on different categories of gas; by the same device the federal government influences who buys the gas in the field.

Those pipelines with the most price controlled cheaper gas have a definite advantage over their competitors with less or little "cushion." Thus, the same price controls which influence producer behavior also influence pipeline behavior, with a decided tilt in favor of some. This is allocation at its worst, since the relative cushion of any pipeline was first set by chance on November 9, 1978. 24/

(b) In the Transportation System--

(i) in the OCS: a private preserve

In the transportation system the range of federal controls over the allocation of natural gas is wide indeed. In some areas, such as the OCS, the federal government, through the FERC, decides who can and who cannot have access to gas supply. Thus, even in a case where there is a willing seller of gas, a willing pipeline to transport the gas from the OCS, and a customer willing to pay the prices of both the producer and the pipeline, the FERC has effectively interdicted the sale. 25/ In practical effect, some pipeline suppliers are therefore benefitted by being freed from prospective competition with other pipelines, and those denied access to the OCS supplies must scramble elsewhere for a gas supply, if any. There are other examples, but this one should suffice to illustrate the point.

(ii) "Abandonment" and "Right of First Refusal" Selectively Applied

The federal government also protects some pipelines from loss of some of their system supply. Some, but not all. In some cases, when producer contracts expire, and the gas would be freed of contractual obligations so that it could move to any market where it was needed, the federal government steps in and requires permission, its permission, before the gas can go to another customer. 26/ Or, the federal government requires that the producer obtain the acquiescence of its present pipeline customer, giving the present pipeline a very advantageous right of first refusal. 27/ Not to all gas, but to some gas. But on some pipeline systems, there is no protection against loss of supply when contracts expire. 28/ Thus, on the one hand, there are artificial regulatory barriers that prevent some gas supply from moving to another market upon expiration of contracts; at the same time there are pipelines without similar protection who are subject to losing all their gas supply on expiration of contracts, with the result that the user must carefully examine which pipeline he is on, how the artificial barriers cut, either for him or against him, and the degree to which those artificial barriers are meaningful. For example, an interstate pipeline, with 79% of its supplies in Section 104, 29/ has a pretty good federal insurance policy against serious loss of gas supply upon expiration of contracts. Another interstate pipeline, with only 29% of its gas supply under section 104, 30/ doesn't have such a good federal insurance policy. An intrastate pipeline doesn't have any federal insurance policy at all.

(iii) Incremental Pricing

The federal government retains the power to influence the buying practices of interstate pipelines through the use of incremental pricing. 31/ My purpose in noting this is not to speak either for or against incremental pricing at this point, but to note the reality. Through the use of incremental pricing, the FERC can cause a surcharge to be passed on to certain industrial users, a device placed in the NGPA for the express purpose of influencing the gas acquisition policy of the interstate pipelines. 32/

(c) Summary--

Thus, the industrial user, seeking answers to the questions of supply security must recognize that the federal government is, inter alia,

(1) influencing gas producer behavior in ways which may redirect supply efforts from the traditional sources of its pipeline suppliers,

(2) influencing gas pipeline behavior in the field by providing bidding advantages for some pipelines over others,

(3) influencing competition for supplies by limiting the number of competitors in the OCS,

(4) influencing competition for existing gas supplies upon expiration of contracts by providing advantages to some pipelines over others, and

(5) influencing gas pipeline behavior by the way incremental pricing is administered.

(3) Price Concerns Under The NGPA.

The concerns of the user toward the price of natural gas are two-fold. First, of course, is the concern of what the user must pay for the gas itself and whether this renders him uncompetitive and second whether the supplier is in a position to stay in business by acquiring new gas supplies which the supplier can resell at a reasonable price. The NGPA situation strikes fear on both counts.

The EIA has published an excellent study which illustrates the current problem. The average cost of gas on interstate pipelines varies by more than 100%. 33/ Wide variances also appear among intrastate pipelines.

The pipelines with the largest cushion have an advantage in bidding, both now and in the future, over those with little or no cushion. If the deeper cushion or desperate pipelines drive the price of available gas high enough, the low or no cushion pipelines can buy only at risk of loss of markets. For the user on a low or no cushion pipeline, this means that he must risk either paying higher prices, perhaps above those of his competitors at home or abroad, or he must get off gas, if he can. The "if" is a very big "if." For feedstock, and the sophisticated process uses, where, for example, precise temperature and flame characteristics are essential, and the plant protection uses, there are few options except to shut down the existing plants or to try to find another supplier who can sell cheaper because of its cushion. This latter option is a difficult one, since there is not always more than one pipeline supplier in a given location and, even if there happens to be, the customers of the potential new supplier may object to the addition of new customers and effectively preclude the necessary permits. For example, even interruptible customers on interstate pipelines have standing to object to new customers being added. 34/

One option intentionally omitted is the relocation of plants. This seems most unrealistic. At best, fortuitous circumstances might permit shifting some production from one existing plant to another, but the overall effect should be loss of production--and jobs--in the economy.

(4) Which States, Regions, and Pipelines, if any, Now Appear to be Relatively Better Off?

Thus, it appears that an industrial user hopes and prays that his plant or plants happens to be on a deep cushion pipeline with as many extra advantages as the federal government will give. This means an interstate pipeline with a deep cushion. With all of the disadvantages of intrastate pipelines, none are likely to be serious contenders to serve these markets.

The Petrochemical Energy Group has attempted to identify those States which have one or more interstate pipeline suppliers who have a less than average cushion projected for 1985 by Foster Associates, Inc. The map is attached. (Appendix B). 35/ There are few States spared.

Examining the situation on a regional basis provides no comfort. 36/ (Appendix C). The range of the projected cushion is such that the average is a meaningless number, although you can see that the average among regions varies significantly also. It is of no comfort to know that the average price in your region is $4.25 if you are paying over $5.00 and your neighbor is paying $3.00, all at the wholesale level. 37/

Taking it back to the interstate pipeline level, the apparently preferred interstate pipelines can be identified. (Appendix D). 38/

REGRESSION TO MORE CONTROLS: THE CONTRACT FIX TO THE NGPA AS IS

But, having identified the pipelines which appear to be better off, and finding, by chance that all of your plants are on deep cushion interstate pipelines, what can you do? We now hear that whatever cushion may exist in 1985 may have been dissipated already by contracts which will take effect on January 1, 1985, if not sooner. 39/

Does it follow that the federal government should abrogate those contractual provisions which the pipelines or distributors find unpalatable and then hold the producer to the other terms and conditions? My observation is that reaction among the industrial users with whom I have most contact ranges from skepticism about a corporation which asks the government to override a contract freely signed to outright repulsion to the proposition that the government should tamper with contracts in order to help one party keep the benefits, yet not have to pay as promised.

On another level, this result is thought to be most inexpedient. Translated into practical terms, what the "contract solution" does, standing alone as a "fix" to the NGPA as is, is to condemn the producer to permanent price controls on all of his currently regulated gas sales rather than just some of them, and perhaps his future sales, too, at an overall lower average price. In other words, what the NGPA says to the producer is: the government is going to hold down the price of some of your sales permanently but, from time to time, you will be allowed to charge whatever you can negotiate, now or then, on other sales. Those who seek only to impose a "contract solution" want to change the message to: the government is not going to allow you to collect what your contract now calls for upon deregulation and the government is going to keep even more permanent price controls on. One would have to expect the producer to adjust his drilling level downward in face of the reality of the lowered anticipated revenues.

Again on the expediency level, if the Government can and does outlaw some contractual provisions, who then sets the price and other terms and conditions? Who, indeed, but the federal government. This "solution" to the "contract question" in the context of continuing the NGPA as is, should be perceived, and correctly so, as nothing more than reimposition of controls and federal regulation, a backward step even from the NGPA.

CONCLUSION

The NGPA causes a natural gas condition that is unstable; correction is needed. The correction should be to the causes of the condition, not to the symptoms generated by the causes. Piecemeal "fixes" are not likely to help, particularly fixes which regress toward imposition of more and more controls.

I respectfully suggest that removal of federal price, allocation, and contract controls offers the best hope for the nationwide gas situation. In my opinion, the bill introduced by Senator Johnston 40/ merits the serious consideration of this Committee, as do bills introduced in the House, most recently by Congressman Gramm, updating his earlier bill, and a bill introduced by Congressman Collins in the meantime. 41/

Thank you for this opportunity.

FOOTNOTES

1/ Amendments to the Powerplant and Industrial Fuel Use Act: Hearings on S. 332, S. 410, S. 980 and S. 996 before the Subcommittee on Energy Regulation of the Senate Committee on Energy and Natural Resources, 97th Congress, 1st Session (1981) [hereinafter cited as Fuel Use Act Hearings].

2/ Implementation of Title I of the Natural Gas Policy Act of 1978: Hearings Before the Senate Committee on Energy and Natural Resources, 97th Congress, 1st Session (1981) [hereinafter cited as Title I Hearings].

3/ Economic Implications of Natural Gas Deregulation: Hearings Before the Subcommittee on International Trade, Finance and Security Economics of the Joint Economic Committee, 97th Congress, 2nd Session (1982) (Testimony of R. Gordon Gooch) [hereinafter cited as Deregulation Hearings].

4/ Letter from Sen. James A. McClure to Robert L. Mitchell (Dec. 7, 1981) (identifying questions with respect to Mr. Mitchell's Nov. 5, 1981 testimony at the Title I Hearings, note 2, *supra*).

5/ Letter from Tom Peterson and Pat McNamara of the Petrochemical Energy Group to Sen. James A. McClure (Jan. 8, 1982) (answering questions regarding implementation of the NGPA) [hereinafter cited as PEG Letter].

6/ *Id*. at 1-4. Reproduced as Appendix A.

7/ Letter from James S. Rubin, Chairman National Association of Manufacturers Committee on Fossil Fuels, to the Honorable James A. McClure, Chairman, Senate Committee on Energy and Natural Resources, dated January 8, 1982; Chemical Manufacturers Association (CMA) Response to Questions from Senator James McClure, Chairman, Senate Committee on Energy and Natural Resources concerning Shortcomings of the Natural Gas Policy Act, January 8, 1982; Letter from Jack Elam, Chairman of Process Gas Consumers (PGC), to the Honorable James A. McClure, January 8, 1982. PGC's views on the proper implementation of deregulation differ in certain respects from these of other groups. (Compare responses cited in fn. 5 & 7).

8/ Letter from The Business Roundtable, *et al*., to President Ronald W. Reagan, September 1, 1981; Letter from Talbott C. Smith, Director, Energy and Resources Policy, Chamber of Commerce of the United States, to Gordon Gooch, March 15, 1982.

9/ PEG Letter, supra, note 5; EIA, "An Analysis of the Natural Gas Policy Act and Several Alternatives: Part 1, The Current State of the Natural Gas Market" (Dec. 1981); EIA, "A Study of Alternatives to the Natural Gas Policy Act of 1978," DOE/PE-0031 (Nov. 1981); Robert C. Means, Director, FERC Office of Regulatory Analysis, "Analysis of the Bidding Disparity Between Interstate and Intrastate Pipelines" (March 10, 1982); EIA, "Short-term Energy Outlook, Volume I" (Nov. 1981); Catherine Good Abbott, "Pitfalls on the Road to Decontrol: Lessons from the Natural Gas Policy Act of 1978," presented at Natural Gas Deregulation Seminar, American Enterprise Institute for Public Policy Research (March 12, 1982). The information submitted to this Committee by the Chemical Manufacturers Association in January, 1982, and cited in fn. 7, supra, deserves special mention. CMA carefully documents and clearly analyzes the serious economic and competitive problems faced by its members, who together are the largest industrial consumer of natural gas, in considerable detail. CMA's observations concerning the effects of the NGPA on industrial gas supply are therefore entitled to considerable weight. In addition, Foster Associates has recently prepared for CMA a thorough study, dated February 16, 1982, entitled "A Comparison and Appraisal of Ten Natural Gas Deregulation Studies," which concludes in part that the NGPA studies reviewed "indicate a number of problems with the phased partial decontrol scheduled by NGPA, which a number of the studies indicate could be eliminated by phased total decontrol." ("Comparison and Appraisal. . . ." at ii).

10/ PEG Letter, supra, note 5, at 1.

11/ Deregulation Hearings, supra, note 3, (statement of Honorable C. M. Butler III, Chairman, Federal Energy Regulatory Commission), (statement of R. Gordon Gooch); Title I Hearings, supra., note 2, (statement of Robert L. Mitchell, Vice Chairman, Celanese Corp., on behalf of the Petrochemical Energy Group).

12/ EIA, "Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices," DOE/EIA-0303 (August 1981).

13/ The report analyzed the gas supply situation under various price and demand scenarios. Under several of these scenarios, the report found that gas shortages could occur. As stated in the synopsis of the report prepared in August, 1981, by the Energy Information Administration:

> "Only if the natural gas markets are slack--that is, supply is high relative to demand--will the NGPA provide a smooth transition to the deregulation of new gas prices in 1985. In conditions where the market is tighter--that is, demand is higher or supply is lower--a sharp increase in natural gas prices is likely to occur in 1985 when new gas is deregulated, and there is the potential for increased imports and gas shortages in 1983 and 1984." "Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices, A Synopsis," August 26, 1981, Energy Information Administration at 2).

These supply shortages would lead to curtailments.

14/ American Gas Association, "The Gas Energy Supply Outlook: 1980-2000" (October 1981); Deregulation Hearings, supra, note 3 (statement by Henry B. Taliaferro, Jr. for the GHK Companies and the Independent Gas Producers Committee).

15/ Dr. Edward W. Erickson, "Natural Gas and the Natural Gas Policy Act: A Pragmatic Analysis" (sponsored by Natural Gas Supply Association) (January 1981).

16/ The ratio of proved reserves to production has declined from approximately 20 in 1960 to 11 in 1980, a decline interrupted only temporarily by Alaska North Slope discoveries. EIA, "1981 Annual Report to Congress," DOE/EIA-0173(81)/3 at 67-68, Figure 26 (February 1982). Domestic production of natural gas is currently projected to decline through 1995. Ibid., Table 16, p. 69. Total domestic supply is projected to decline through 1990. Id. EIA assumes a 1995 increase in domestic supply due entirely to a 400% increase over projected 1985 levels of synthetic gas production. Id. EIA projects demand for natural gas to remain relatively stable in the period 1985-1995, with the result that large shortfalls will result if it is necessary to rely on domestic natural gas supply. Ibid. at Table 3.6, p. 162, (mid-range projection).

In the face of projected declines in production, the number of natural gas wells actually completed has increased. Since 1975, the number of wells completed annually has increased by 36% while the ratio of reserves to production continued to decline. Id. and EIA, "Monthly Energy Review," DOE/EIA-0035 (82/02) at 56 (Feb. 1982).

17/ EIA projects small declines in total U.S. supply through 1990 with declining natural gas production in the lower-48 offset by Alaskan production, imports, and synthetic gas production. EIA 1981 Annual Report to Congress, Table 16, p. 69; and see text in fn. 16, supra.

18/ For example, in 1980 72% more oil wells were completed than were natural gas wells. In 1980, the average domestic wellhead price for oil was $3.65/MMBTU and that for natural gas was $1.50/MMBTU. A similar pattern has existed since at least 1976. EIA, "Monthly Energy Review", DOE/EIA-0035 (82/02) at 56, 78, 87 (February 1982).

19/ Natural Gas Policy Act of 1978, Pub. L. No. 95-621, 92 Stat. 3350 [hereinafter, NGPA], Title I (§§ 101-123), 15 U.S.C. §§ 3311-3333 (1975-1979 Supp.).

20/ Prescribed Maximum Lawful Prices Under the Natural Gas Policy Act of 1978, 47 Fed. Reg. 4504 (Feb. 1, 1982).

21/ The highest reported price bid for deregulated gas which we have found is $10.76/mcf. 1349 Foster Natural Gas Report 15 (Feb. 4, 1982).

22/ NGPA § 107(c), § 121(b), 15 U.S.C. 3317(c), 3331(b) (1975-1979 Supp.). As of February, 1982, the highest reported price bid for deregulated § 107 deep gas which we have found is $10.54/MMBTU. 1349 Foster Natural Gas Report 15 (Feb. 4, 1982). The fact that the NGPA holds down other gas prices allows some pipelines to pay high prices by "rolling in," or averaging out, the high cost gas. See text at fn. 33-38, infra. In addition to price incentives, the NGPA insulated any prices paid for this gas from being used as a reference price in other gas contracts (NGPA § 313(a), 15 U.S.C. § 3373(a)) and virtually eliminated the risk that the gas would have to be incrementally priced to industrial users under the Title II of the NGPA (NGPA § 203(a)(7), 15 U.S.C. 3343(a)(7)). To place this in perspective, the average homeowner in September 1981 paid $4.96/MMBTU for gas and $8.63/MMBTU for home heating oil and the average price for 6 oil used by utilities and heavy industry was $4.77/MMBTU. EIA Monthly Energy Review, (January 1982) at 85, 82, and 76, respectively.

23/ Federal Energy Regulatory Commission [hereinafter FERC] Notice of Proposed Rulemaking, RM82-8 (issued December 30, 1981) (to consider establishment of incentive prices for certain gas produced from depths of 10-15,000 feet). See also FERC Notice of Proposed Rulemaking, RM80-38 (issued July 11, 1980) (to consider establishment of incentive prices for gas proposed from acreage submerged at water depths 500 feet or greater).

24/ November 9, 1978 is the date of enactment of the Natural Gas Policy Act. Title I of the Act fixes maximum lawful prices for a series of categories of gas, thus establishing pipeline "cushions." 15 U.S.C. §§ 3311-3333.

25/ On March 20, 1978, in Opinion No. 10, the FERC announced that as a matter of policy it would refuse to allow producers to "reserve" offshore gas for use in their own facilities, such as oil refineries, or for direct sales to other purchasers, such as industrial customers. In effect, Opinion No. 10 ensured that all natural gas produced from the Outer Continental Shelf would be sold to interstate pipelines. Opinion 10, Tenneco Oil Co., CI75-45 (March 20, 1978) affd. on rehrg., Opinion 10-A, Tenneco Oil Co., CI75-45, June 21, 1978; vacated and remanded, Air Products and Chemicals v. FERC, 650 F.2d 687 (5 Cir. 1981). The matter is now before the FERC on remand from the 5th Circuit; see "Order Granting Motions in Part on Remand from the Court of Appeals, Supplementing Opinion Nos. 10 and 10-A, and Issuing Notice Providing for Comments and Reports," issued February 10, 1982 in Tenneco Oil Co., supra. See also Section 603 of the Outer Continental Shelf Lands Act Amendments of 1978, 43 U.S.C. § 1862, requiring the FERC to promulgate a statement of policy designed to carry out the purposes of the section to encourage expanded participation by local distribution companies in acquisition and development of OCS reserves. This requirement was implemented in FERC Order No. 92, Docket No. RM81-11 (July 15, 1980).

26/ Natural Gas Act § 7(b), 15 U.S.C. 717(f)(b), requires FERC approval prior to abandonment of facilities of natural gas companies subject to the jurisdiction of the Commission or any service rendered by means of such facilities. This provision would apply to sales of § 104 gas which is, by definition, committed or dedicated to interstate commerce. § 104(a), 15 U.S.C. 3314(a); § 601(a)(1)(B), 15 U.S.C. § 3431(a)(1)(B) (1975-1979 Supp.).

27/ NGPA § 315, 15 U.S.C. § 3375 (1975-1979 Supp.); implemented in Order No. 95, FERC Dkt. No. RM80-8, July 28, 1980.

28/ However, no such protection is available for purchases of supplies of § 105 and § 106(b), or intrastate, gas, since the first sales of such gas are exempt from the operation of § 315 and from the FERC's Natural Gas Act jurisdiction. NGPA § 315(a)(1); § 601(a)(1)(A).

29/ See EIA, "An Analysis of the Natural Gas Policy Act and Several Alternatives; Part I: The Current State of the Natural Gas Market" at Table 19, p.66 (Dec. 1981).

30/ Ibid.

31/ NGPA Title II, §§ 201-208, §§ 15 U.S.C. 3341-3348.

32/ Statement of Honorable John D. Dingell, Cong. Rec. H13114 (daily ed. Oct. 14, 1978); statement of Honorable John D. Dingell, Cong. Rec. E59 (daily ed. Jan. 23, 1980).

33/ EIA, "An Analysis of the Natural Gas Policy Act and Several Alternatives; Part I: The Current State of the Natural Gas Market" at Table 19 (Dec. 1981).

34/ Granite City Steel Co. v. FPC, 115 U.S. App. D.C. 392, 320 F.2d 711 (1963).

35/ PEG letter, supra n.5; see also Deregulation Hearings, supra note 3, at Chart 5 (statement of R. Gordon Gooch). Reproduced as Appendix B.

36/ PEG Letter at Figure 2. Reproduced as Appendix C.

37/ Ibid.

38/ PEG Letter at Figure 1. Reproduced as Appendix D.

39/ The American Gas Association has alleged in recent Congressional testimony that:

> "Despite our conclusion that no fly-up will occur that is attributable to the NGPA pricing schedule, we are concerned that a serious fly-up will occur unless steps are taken to deal with indefinite price escalator clauses. Most of the adverse effects of decontrol under either the existing NGPA or total deregulation scenarios can be attributable to the effect of these indefinite escalator clauses. . ." Statement of the American Gas Association before the Joint Economic Committee United States Congress, on the Economic Impact of Natural Gas Deregulation, February 18, 1981 at 9.

40/ S. 2074, by Senator Johnston (D-La.).

41/ H. R. 5866, introduced Wednesday, March 17, 1982 by Representative Gramm (D-Tx.); H.R. 3246, by Representative Collins (R-Tx.).

Excerpt from PEG Letter, January 8, 1982 Appendix A

1. Do you support any amendments to the NGPA? If so, please describe in detail what you advocate.

Yes. The NGPA should be amended to accomplish the deregulation of all wellhead sales, not only as to price controls, but also as to federal controls which allocate gas to a particular pipeline or to a particular market, such as abandonment requirements, rights of first refusal, minimum contract duration, and preferential access to OCS gas. It is essential that total decontrol occurs on a single date certain, not piecemeal on two or more dates. Thus, a phased decontrol schedule, even with earlier deregulation in whole or in part of new wells, should reach a single target date on which controls terminate; one or more categories of gas should not have a different target date. The objective should be to bring the average price of gas at the wellhead to a market clearing level and to eliminate all "cushions" caused by price ceiling controls for all gas on the single target date for decontrol.

If these objectives are met by legislation, then demand controls, such as incremental pricing and fuel use act restrictions, should also be eliminated.

The goal should be to assure consumers in any State that they or their suppliers will have equal access to all gas supplies in the fields, wherever they are, subject only to contracts and fair competitive considerations, but not subject to the whims of federal regulation.

After the date of total decontrol, there remain problems to be resolved with respect to contracts entered into under compulsion by the federal government or entered into in the light of the NGPA.

PEG has previously furnished, and includes herein, another copy of a study done by Foster Associates, Inc., which illustrates the problem caused by compulsory federal contract terms. This may be described as the area rate clause problem. This will cause another "cushion" problem, if not handled properly.

In brief, in the 1960s, the FPC outlawed all indefinite pricing clauses in contracts subject to its certificate jurisdiction and substituted an area rate clause which allowed the producer to increase his price by the amount authorized in producer ratemaking. While a flaw in the NGPA, as interpreted by the FERC, has generated much litigation, controversy, and uncertainty about some producer price increases under the NGPA, the problem becomes even more acute upon decontrol. An illustration may suffice. Assume a producer signed a twenty-year contract in the late 1960s containing a fixed price of $.25 an mcf and an area rate clause pursuant to FPC regulations. Assume further that the contract has not been amended. Assume still further that the producer, relying on the area rate clause, increases his price to the target price, as authorized by the Congress in this legislation. On the date of total decontrol, what price does his contract authorize him to collect?

Must he (a) go back to $.25, on the theory that the area rate clause is inoperative in the absence of a federally set ceiling price to use as a reference?

(b) or, would the producer still be permitted to fall back to the NGPA prices, as if the Act had not been amended?

(c) or, would the area rate clause operate to track the deregulated market price for gas?

If the answer is (a) or (b), total decontrol would result in the rollback of some prices, thus creating another "cushion" with all the attendant problems.

The Foster Analysis of NGPA Section 104 Contracts examines cases (b) and (c) and finds, in our view, a significant cushion. Had case (a) been examined, the cushion would be even greater.

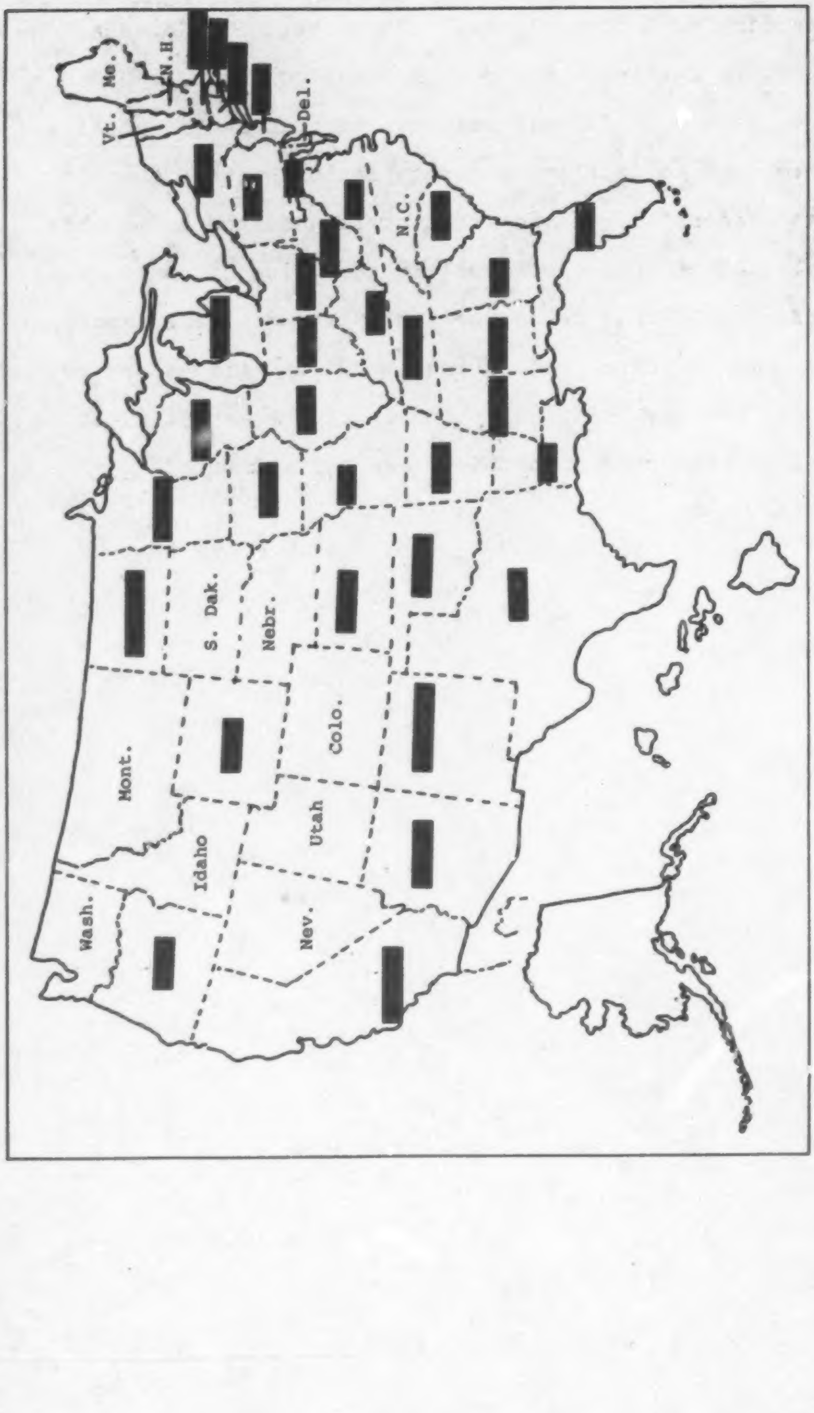
Thus, an integral part of the "contract problem" is the area rate clause problem, and steps must be taken to avoid creation of another cushion problem, paving the way for overbidding for supply.

Analytically, the other components of the possible "contract problem" include (a) contracts currently deregulated pursuant to § 107, (b) contracts containing clauses relating the price of gas to other commodities, such as refined petroleum products or natural gas imports, called herein for convenience, "commodities clauses," (c) contracts containing clauses relating the price of gas to other current gas prices for conventional wellhead sales, called herein for convenience, favored nations clauses, and (d) contracts containing none of the above. This short list does not purport to catalogue all permutations possible.

The preferable solution to this set of possible problems is to facilitate renegotiations rather than to extend federal regulation to contracts further, for this is simply ceiling price controls in the guise of contract controls. If this cannot be accomplished, it is important to minimize federal regulation of ceiling prices and to insure that any ceiling imposed is at the market clearing level so that cushion problems are not recreated.

Appendix B

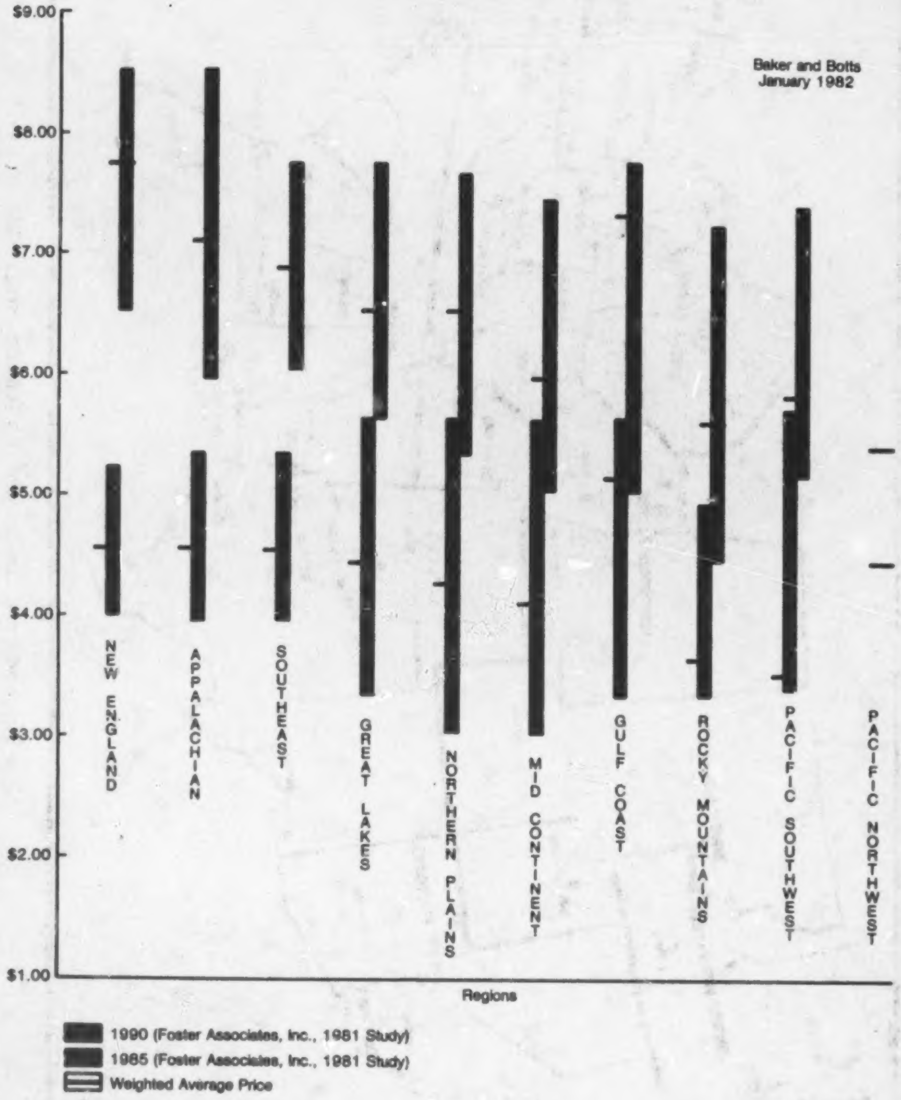
States Served by One or More Major Interstate Pipelines Projected by Foster Associates, Inc. to Have Greater Than Average Purchased Gas Cost in 1985


Wash.
Idaho
Mont.
Nev.
Utah
Colo.
S. Dak.
Nebr.
N.C.
Vt.
Me.
N.H.
Del.

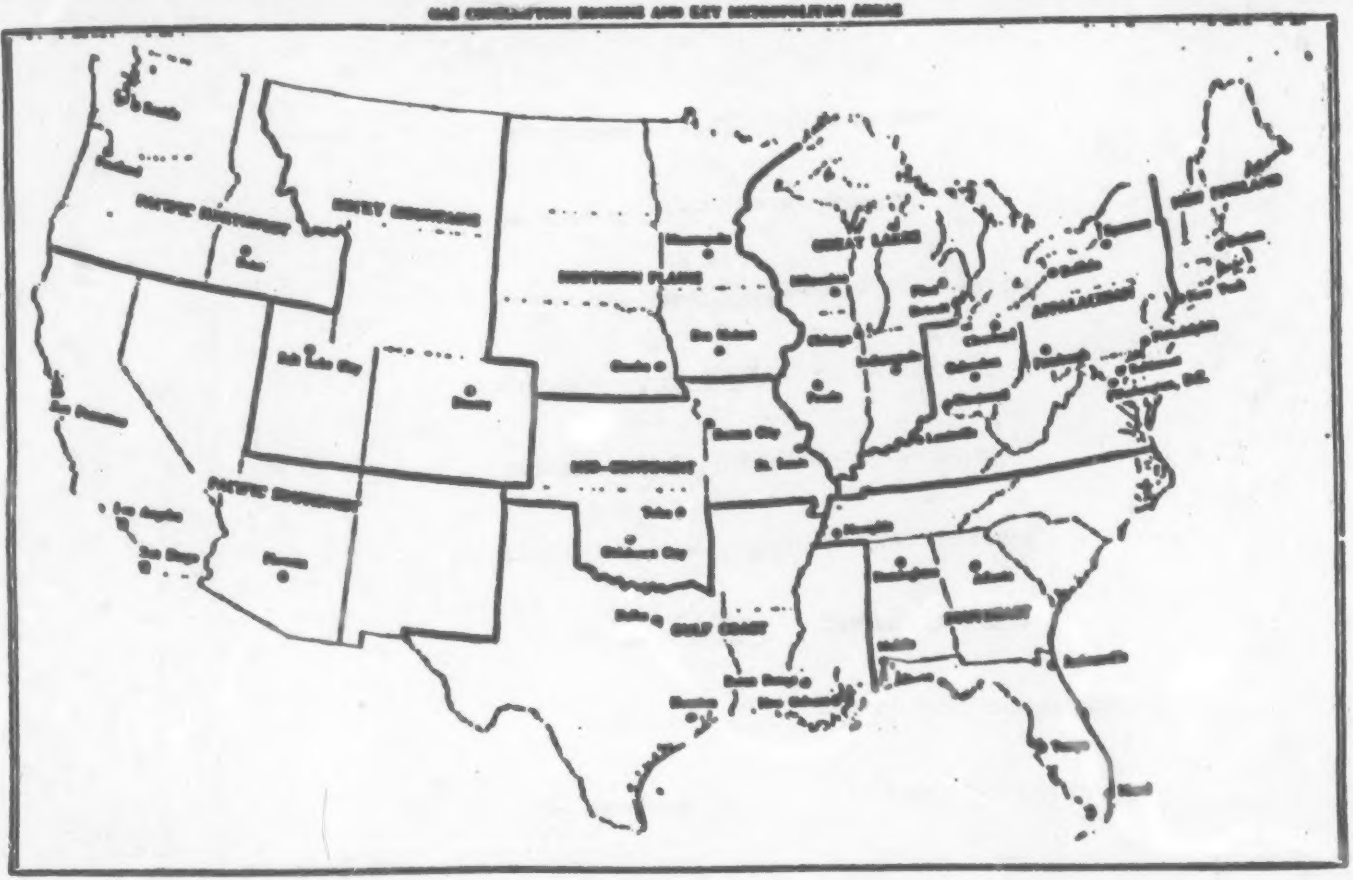
Baker & Botts
January 1982

Appendix C

RANGE OF GAS ACQUISITION PRICES OF 24 INTERSTATE PIPELINES 1985 AND 1990 BY GAS CONSUMPTION REGIONS (1981 $/MMBtu)



GAS CONSUMPTION REGIONS AND CITY METROPOLITAN AREAS

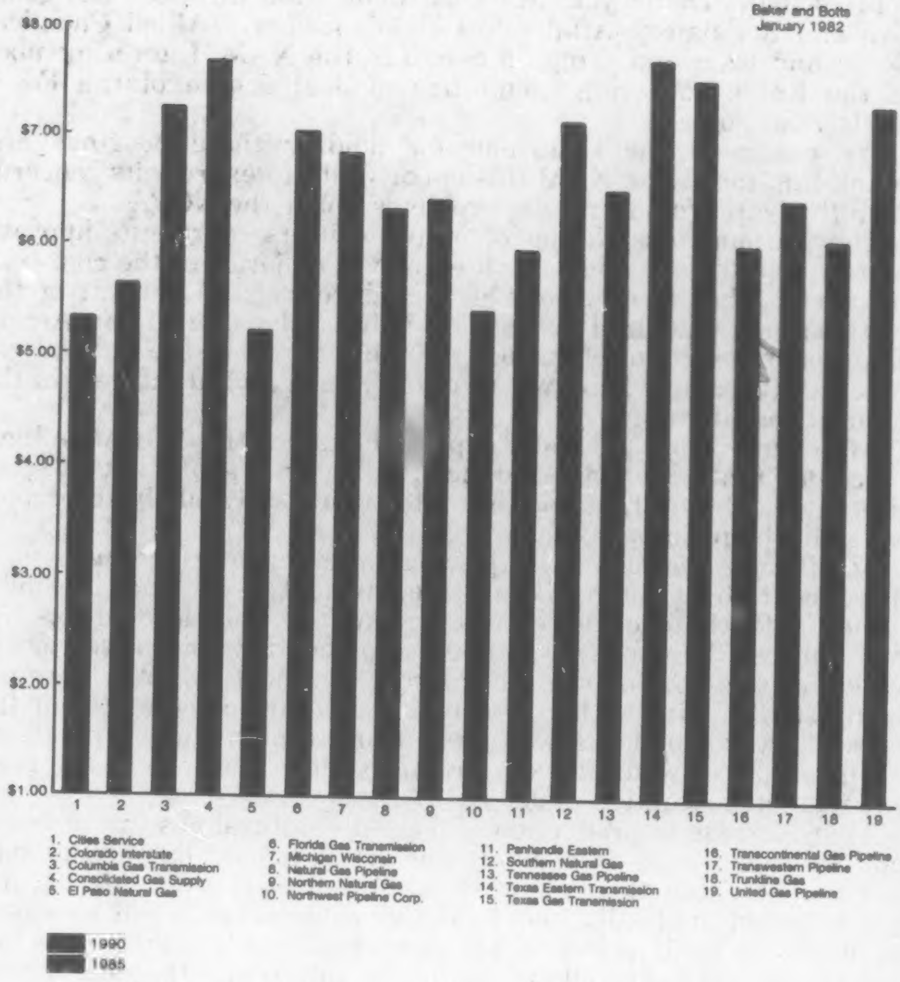

PACIFIC NORTHWEST
ROCKY MOUNTAINS
NORTHERN PLAINS
GREAT LAKES
APPALACHIAN
NEW ENGLAND
MID-CONTINENT
PACIFIC SOUTHWEST
GULF COAST
SOUTHEAST

Appendix C is keyed to these regions.

Appendix D

**PROJECTED ROLLED-IN NATURAL GAS PRICES
FOR MAJOR INTERSTATE PIPELINES
(1981 $/MMBtu)**

Baker and Botts
January 1982



Courtesy: Foster Associates, Inc., 1981 Study

Senator NICKLES. Thank you very much. Mr. Rubin.

STATEMENT OF JAMES S. RUBIN, DIRECTOR, LEGISLATIVE AND REGULATORY AFFAIRS, ALLIED CORP., ON BEHALF OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. RUBIN. Thank you, Mr. Chairman. I am director of Legislative and Regulatory Affairs for Allied, formerly Allied Chemical Corp., and I am appearing on behalf of the NAM. I am a member of the Energy Steering Committee, and chairman of the Fossil Fuels Task Force.

We commend the Chairman for holding these hearings and thank him for giving NAM this opportunity to express its concerns with the Nation's natural gas problems under the NGPA.

The National Association of Manufacturers represents approximately 12,000 companies which employ a majority of the country's industrial labor force, and which produce over 85 percent of the Nation's manufactured goods. The industrial sector of the American economy accounts for more than 40 percent of the natural gas used in this country, and we, therefore, have a vital interest in the natural gas situation.

After more than 3 years of experience under the NGPA we have concluded that it has failed to meet the original goals that its sponsors intended, and that the present problems are likely to become worse in the future.

Specifically we refer to a pricing mechanism which caps most new gas at about one half the Btu equivalent of oil. That in combination with the even lower price ceiling on so-called old gas has had and will have negative supply repercussions, negative conservation results, and market disordering ramifications. While we see many studies with various conclusions, we are convinced that the laws of basic economics will prevail and that higher unregulated wellhead prices would have a greater supply response in the present regulated situation under NGPA.

That increase in production of domestic natural gas would lessen our dependence on foreign oil and improve our balance of payments. The national security implications are clear because natural gas is priced artifically low. Incentive to conserve is not as strong as it would be if prices were allowed to reach market clearing levels. Natural gas should be treated no differently than oil or coal. Price should be determined by supply and demand, not by an artificial pricing mechanism.

We are also aware that various natural gas pipelines have different supply and cost positions. Thus the competitive viability of many of NAM's members is determined by what pipeline they are purchasing from rather than how energy efficient they are, and these discrepancies will be intensified on January 1, 1985 should the ceiling price on only new natural gas expire. This will result in a price spike and exacerbate the skewing in the inter- and intrastate markets and directly threaten the viability of a number of domestic industries.

NAM believes that the NGPA neither benefits producers nor consumers. In March of last year NAM's Board of Directors consisting of this Nation's leading industrialists and representing virtually every segment of the American industry overwhelmingly approved the policy supporting phased deregulation of all natural gas by 1985, and removal of demand constraints by repealing incremental pricing in the Fuel Use Act.

Referring specifically to S. 2074, earlier this year NAM's Task Force on Fossil Fuels reviewed Senator Johnston's and Representative Gramm's proposals, and overwhelmingly endorsed their principles and objectives. NAM believes that such legislation would rectify the shortcomings of the NGPA and lead to more efficient natural gas utilization.

Frankly, Mr. Chairman, we were disappointed with the administration's decision not to seek accelerated deregulation at this time. Nevertheless, we continue to believe that this critical issue must be addressed and the NGPA be corrected at the earliest opportunity.

Thank you.

[The prepared statement of Mr. Rubin follows:]

STATEMENT OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

BY

JAMES S. RUBIN

ON

NATURAL GAS POLICY AND REGULATORY ISSUES

BEFORE THE

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

MARCH 23, 1982

My name is James S. Rubin, Director of Legislative and Regulatory Affairs for Allied Corporation, formerly Allied Chemical Corporation. I am appearing on behalf of the National Association of Manufacturers (NAM), in my capacity as a member of its Energy Steering Committee, and Chairman of that committee's Fossil Fuels Task Force. I am accompanied today by Richard Seibert, NAM Vice-President for Resources and Technology; Robert Kiernan, Director of Energy; and Bonnie Bird, Energy Program Analyst.

We commend the Committee for holding these hearings and thank the Chairman and his staff for affording NAM the opportunity to express its concern over the current state of natural gas policy and regulation, and to suggest modifications to existing law.

The NAM is a voluntary membership organization representing approximately 12,000 companies which employ a majority of the country's industrial labor force and which produce over 85 percent of the nation's manufactured goods. The Association is also affiliated with an additional 158,000 businesses through the National Industrial Council and NAM's Associations' Department.

The NAM is testifying before the Committee today on behalf of industrial users of natural gas. The industrial sector of the American economy accounts for more than 40 percent of all the natural gas consumed in this country. Therefore, industrial users have a vital interest in the present state of natural gas policy and regulation. In that regard, the NAM respectfully submits that the prevailing consensus today among NAM members, after more than three years of operating experience under the Natural Gas Policy Act of 1978 (NGPA), is that the NGPA has failed to meet the legislative intent of the Congress and that the overall deficiencies of the Act are likely to be exacerbated in the future. Industrial users in general, and the NAM in particular, have concluded that the overall impact of NGPA and the related regulatory structure has been to seriously distort natural gas production, price, and utilization and to create uncertainty about the future availability and cost of this premium fuel.

Specifically, we have concluded that the NGPA pricing mechanism, in conjunction with circumstances occuring since enactment, has led to:

- Artificial, below market price ceilings for "old" and most "new" gas which have, in turn, led to a skewed and overall lessened supply response than an unregulated market would have;

- The supply effects of NGPA have impeded the nations ability to reduce oil imports, thereby threatening the national security;

- The effect of the various pricing provisions on the inter/intrastate markets has resulted in inequitable price disparaties, thereby introducing unfair competitive advantages and disadvantages amongst industries;

- The flawed pricing mechanism for "new" gas raises the possibility of a price "spike", thereby threatening a smooth transition to partial deregulation;

- Artificial, below market price ceilings for natural gas have discouraged conservation; and

- The Powerplant and Industrial Fuel Use Act of 1978 (FUA) and incremental pricing under Title II of NGPA are artificial, non-market demand constraints which distort gas consumption and utilization.

Artificial, below market price ceilings for "old" gas and incorrect gas to oil price projections for "new" gas have resulted in reduced natural gas exploration and production. Under Title I of NGPA, the wellhead price of natural gas produced prior to 1977 ("old" gas) is allowed to increase with the rate of inflation but is never deregulated; the wellhead price of natural gas produced after 1977 ("new" gas) is allowed to increase at a rate slightly higher than inflation up to an equivalent 1985 oil price of $15 per barrel (in constant 1978 dollars) and then deregulated. Therefore, under NGPA the price of "old" natural gas is permanently held below market-clearing levels and the price of "new" natural gas increases along a trend line pegged to an unrealistic projection. Even with the recent price declines, the current price of crude oil is still well above the NGPA's forecast. NAM believes an unregulated market will by definition provide a greater supply response than would a regulated market. Without the free-market economic incentives needed to explore for and produce additional natural gas supplies, the nation could very well face natural gas shortages in the years ahead.

The NGPA effects on natural gas exploration and production has impeded the nations ability to further reduce oil imports, thereby threatening the national security. The NAM believes that continued reliance upon imported oil poses, by its very nature, a national security threat.

The United States has made progress towards achieving the critical national goal of reducing dependence on costly, unstable sources of foreign oil. The removal of government-imposed controls on the wellhead price of domestic crude oil produced significant economic and security benefits. Today, crude oil imports have significantly decreased, domestic oil exploration and production activity has increased, and the nation has reduced its oil consumption dramatically.

While the deregulation of oil was a positive first step, the nation is still dependent on foreign oil for nearly 40 percent of its petroleum needs. This continued, although reduced, dependence on foreign sources leaves the country susceptible to rapid increases in crude oil prices and disruptions in crude oil supplies--either of which would have far-reaching, negative effects on the economy and on national security.

The nation remains vulnerable because development of other energy resources--resources that could further reduce our dependence on foreign energy--have been impeded by certain federal legislation.

The NGPA, because it fails to provide adequate economic incentives to produce additional domestic natural gas supplies (compared to a free-market), has contributed toward our susceptibility to oil import disruptions. Every additional 1 trillion cubic feet of gas produced in this country represents 500,000 barrels of oil less per day that this nation would have to import.

Not only would increased domestic natural gas production make the nation less susceptible to oil import disruptions, it would also significantly reduce the amount of American dollars going abroad. This reduction in expenditures on foreign energy would both improve the nation's balance of payments and leave more capital in this country for industrial investment and expansion.

The effect of the NGPA pricing provisions on the inter/intrastate markets has resulted in inequitable price disparaties, thereby introducing unfair competitive advantages and disadvantages amongst industries.

The NGPA has produced a widely varying patchwork of natural gas prices in the United States. "Old" gas is regulated at very low prices, "new" gas is regulated at higher prices, and deep gas and imported gas sells at market levels. The pipelines which serve industrial users obtain their gas through a different mix of these various sources. Some pieplines may have large amounts of low cost "old" gas while others may rely heavily on high-cost "new" gas. Thus, pipelines serving different parts of the country will pay widely varying prices for natural gas, to the advantage of some users and the disadvantage of other users. The competitive viability of many of NAM's member companies is determined by what pipeline they are purchasing from rather than how well-managed or efficient they are and these inequities will be severely exacerbated in 1985 when the price of only "new" natural gas will be deregulated.

The flawed pricing mechanism for "new" gas raises the possibility of a price "spike", thereby precluding a smooth transition to partial deregulation. Part of the Congressional intent in enacting NGPA was to provide for the gradual increase of "new" gas prices toward the market price for oil. Because the original NGPA target price of $15 per barrel oil in 1985 has not been amended, industrial users face the possibility of a sudden, severe price "spike" upwards as "new" gas prices jump from artificially low levels to market clearing levels. The impact of this price "spike" on the manufacturing community would be severely disruptive, and could lead to plant closings and lay-offs. The price "spike" phenomena is clearly inconsistent with the Congressional intent of providing a smooth, predictable transition to higher cost natural gas.

Artificial, below market price ceilings for natural gas have discouraged conservation. The NGPA, in addition to holding down domestic natural gas production, encourages the wasteful utilization of gas and reduces the incentive to conserve this premium fuel. Because the NGPA holds the price of natural gas well below the equivalent price of other energy resources, particularly crude oil, interfuel competition is not a reality and there exists an incentive to use natural gas in instances where other fuels would be readily substituted. Thus, by pricing the cleanest and often the most desirable fuel far below its competition, the NGPA has caused natural gas to be utilized inefficiently. The potential efficiency gains from improved natural gas use under a phased deregulation scenario are variously estimated to be as high as approximately 1 trillion cubic feet of gas - equivalent to 500,000 barrels of oil per day.

Besides the inefficiency problems caused by artificial, below market price ceilings, additional inefficiencies are caused by other legislative and regulatory problems. The Fuel Use Act (FUA) artificially restricts natural gas utilization by an outright ban on certain industrial uses. Also, the incremental pricing under Title II of NGPA requires some industrial users to pay more for natural gas than other types of users pay. The FUA and incremental pricing are artificial, non-market demand constraints which further distort gas consumption patterns and render overall gas utilization more inefficient.

Policy Recommendations

In addition to describing how the NGPA and the related regulatory structure affect NAM's member companies, we have been asked to suggest modifications to existing law and to comment on pending proposals, specifically Senator Johnston's Bill S.2074.

The NAM strongly believes that current natural gas policy and the related regulatory structure benefits neither producers, users, or the nation at large. The NGPA in particular has clearly failed to meet the legislative intent of the Congress and its overall deficiencies will become even more apparent in the near future. The Fuel Use Act and the incremental pricing provisions of NGPA have not efficiently ordered natural gas markets, but instead have introduced widespread inefficiencies and market disorder. NAM believes that the free-market, rather than the government, is the most efficient allocator of scarce resources.

In March of 1981, the NAM's Board of Directors, consisting of this nation's leading industrialists and representing virtually every segment of American industry, overwhelmingly approved (by a vote of 170 to 6) a policy supporting the phased deregulation of all natural gas by 1985. Included in that policy is support for repeal of Fuel Use Act and the repeal of incremental pricing under Title II of the NGPA. (The complete text of the NAM's Board of Directors policy recommendation and supporting statement is attached for your information.)

Pending before the Senate is Senator Johnston's Bill S.2074, the Natural Gas Production and Market Adjustment Act of 1982. The NAM believes that this legislation will rectify the shortcomings of the NGPA and eliminate the regulatory barriers to more efficient gas utilization. The NAM's Energy Committee's Task Force on Fossil Fuels met early this year to review Senator Johnston's proposal and Representative Gramm's proposals and overwhelmingly endorsed their principles and objectives.

The NAM believes that natural gas deregulation makes good energy policy and that it must be accomplished now. We believe that a natural gas deregulation proposal should be enacted now because overall energy supplies are good, natural gas markets are stable for the near-term, oil prices are declining and so are imports.

The NAM was disappointed in the Administrations' decision of March 1st not to seek accelerated deregulation legislation at this time. Nevertheless, we continue to believe that this critical national energy issue must be addressed and the NGPA corrected at the earliest opportunity. In addition, NAM believes it would be unwise for the Congress to interfere with natural gas rulemaking procedures presently pending at the Federal Energy Regulatory Commission (FERC).

Thank you.

NAM

NATURAL GAS POSITION

The wellhead price of natural gas should be deregulated in order to encourage additional exploration, production and more efficient use of natural gas. The primary cause of the present uncertain natural gas situation is the long-standing federal control of the price of natural gas. Significant quantities of economically usable natural gas remain to be discovered. Additional supplies can be obtained from existing fields and wells with investment in production enhancement techniques. The best way to provide necessary incentives to increase gas exploration, production, and its more efficient use is to deregulate the wellhead price of all natural gas through immediate deregulation of "new" natural gas and phased deregulation of "old" natural gas by 1985 thereby minimizing the potential for sudden acceleration of natural gas prices and distortions between the interstate and intrastate natural gas markets. In the process of implementing complete decontrol of natural gas by 1985, there should be no legislation enacted which abrogates the terms and conditions of existing contracts. An excise, "windfall" tax on natural gas would reduce the positive effects of deregulation and should not be enacted.

NATURAL GAS

EXPLANATION OF POSITION

Since the passage of the Natural Gas Policy Act of 1978 (NGPA), many of the assumptions made at that time by Congress concerning the natural gas market are no longer true. These NGPA policies were based on the assumption that supplies of natural gas were limited and oil prices would approximate $15 per barrel of oil equivalent by 1985. The current trends in the gas market and the skyrocketing price of oil raise serious questions about these underlying assumptions and about the viability of the present decontrol position. In light of today's changed circumstances, a smoother transition to decontrol in 1985 is necessary.

There is a common misconception that the Natural Gas Policy Act of 1978 decontrols all natural gas in 1985. This is simply not true. Under the NGPA, only "new" natural gas is decontrolled in 1985. "New" gas accounts for approximately fifty percent of the total natural gas supply. The NGPA does not deregulate "old" natural gas, which comprises the other fifty percent. The NGPA was a very important step forward toward total deregulation of natural gas in 1978, and there is no question that the NGPA has precipitated additional exploration and development of natural gas supplies. Nevertheless, there are these serious problems with the NGPA which need to be addressed.

The NAM position supports total deregulation of natural gas in a phased manner by 1985. The wellhead price of natural gas should be deregulated in order to increase both its supply and more efficient use. Deregulation by 1985 also effectively addresses concerns raised about "fly-up" of natural gas prices created by immediate deregulation and the trend line established for "new" gas decontrol targeted at $15 per barrel of oil equivalent (1978 dollars) as the gas to oil parity in 1985, and the concern raised regarding the "old" gas cushion that will exist in 1985 upon partial deregulation.

Decontrolling all gas, including "old" gas in a phased manner, would help eliminate the interstate and intrastate market disorder likely to occur in 1985. Under the current NGPA, the price of "old" gas in the interstate pipelines after 1985 continues to be controlled while most "old" gas in intrastate pipelines is decontrolled in 1985. This differential treatment of "old" gas creates a price cushion for the interstate pipelines. This "old" gas cushion gives the interstate pipelines a price edge and the potential to bid gas supplies away from the intrastate pipelines upon this partial deregulation in 1985. Deregulating all gas by 1985 will effectively eliminate or reduce this problem of interstate "raiding" of intrastate supplies. In addition, establishing the price of all gas at its true market level will encourage conservation by users, additional exploration and production, and also enhance development of technologies to replace the use of natural gas where it is technically and economically feasible.

NAM's position of phased deregulation by 1985 represents what the NAM Energy Committee believes to be a realistic compromise that corrects serious deficiencies in the NGPA Title I pricing mechanism. The policy also supports the position that upon total decontrol there be no legislation which abrogates the terms of existing contracts or imposes an excise, "windfall" tax.

In addition to this deregulation scheme, NAM strongly supports the repeal of incremental pricing under Title II of the NGPA. Future higher cost gas supplies should be "rolled in", and not incrementally priced exclusively to industrial users.

Senator NICKLES. Thank you very much, Mr. Rubin. Mr. Lykins?

STATEMENT OF DONALD LYKINS, PRESIDENT, LYKINS OIL CO., ON BEHALF OF THE NATIONAL OIL JOBBERS COUNCIL, ACCOMPANIED BY MARK BAKER, VICE PRESIDENT, HEATING FUEL POLICY, NATIONAL OIL JOBBERS COUNCIL

Mr. LYKINS. Good morning, Mr. Chairman, members of the committee. My name is Donald Lykins, and I am president of Lykins Oil Company, an independent petroleum product distributorship in Milford, Ohio.

I am here today on behalf of the National Oil Jobbers Council, a federation of 42 State and regional trade associations representing approximately 18,000 small independent petroleum product marketers.

I am accompanied by Mark Baker, vice president of Heating Fuel Policy of NOJC. I will summarize my prepared statement and ask that the full statement be entered into the record.

It is ironic that despite the obvious fact that petroleum product decontrol has worked to ensure adequate supply, has added incentive to conserve, and has decreased this Nation's dependence on foreign energy supplies, we still insist on sheltering gas utilities from the reality of the market.

The Natural Gas Policy Act is creating enormous distortions which only help natural gas utilities build their market share at the expense of heating fuel consumers, marketers, and ultimately natural gas consumers. If we continue to operate under the Natural Gas Policy Act we foster even greater regional inequities in supply and price for all fuels that bear on jobs, industry, and all consumers.

The greatest irony of the present situation is that the average heating oil dealer is a small businessman risking his business and capital with no guarantee of a return on his investment, while our chief competitors in the natural gas utilities are monopolies guaranteed an established rate of return on investment, and Federal price protection under the Natural Gas Policy Act.

Recently there has been several exaggerated predictions by some opponents of deregulation that the price of natural gas to consumers will skyrocket. These same claims were made about the impact of oil decontrol. Our experience in the heating oil industry which has been decontrolled since 1976 is worth noting. Since decontrol, consumers and the industry have successfully responded to higher prices through increased efficiency. As an industry, are at the forefront in urging our customers to conserve and showing them how to do so.

In a recent survey conducted by the NOJC, it showed that heating oil dealers estimate a 10 to 20 percent loss in fuel oil sales volume during the past 12 months alone as a result of conservation and increased efficiency. In addition, oil heating equipment manufacturers have rapidly developed more efficient oil heating equipment. In fact, it may surprise you to know that oil heating equipment has higher seasonal efficiency than natural gas equipment. Fuel oil fires at 76 percent. Gas fires at 65 percent. According to a study written by DOE analysts, consumers who heat with natural gas use 22 to 32 percent more energy than do consumers who heat with oil.

The oil industry worked effectively to help low-income consumers meet the higher cost of heating their home. The past year NOJC supported budget provisions which allowed use of some low-income energy assistance programs funds for weatherization of low-income homes, including furnace upgrading; a one-time expenditure for a furnace retrofit can produce fuel oil savings of 25 to 35 percent for a 10-year period.

Deregulation under the Natural Gas Policy Act is not working. To avoid further chaos and inequities, all natural gas prices should be deregulated no later, no later than 1985. To this end, we commend Senator Johnston and Long and Representative Gramm for their far-sighted efforts toward receiving a workable solution to the problems caused by the Natural Gas Policy Act. A complete legislative overhaul is required in order to address the current and future problems.

One additional point needs to be made with respect to the Federal Energy Regulatory Commission. Efforts to review the pricing regulations and accelerate the price of certain categories of natural gas, just and reasonable, acceleration of certain natural gas prices, is in the power granted to FERC by Congress in the Natural Gas Policy Act. The FERC commissioners and staff have clearly shown they do not intend to take any action nor accelerate certain natural gas prices to just and reasonable levels without thorough review and public comment.

The preferential treatment of the residential user of natural gas was grossly unfair to those consumers who heat their homes with heating oil and electricity, petroleum, natural gas, coal and nuclear, are our prime sources of energy and will continue to be well into the next decade unless alternate sources can be developed. Only with consistent policy to efficiently utilize all domestic energy resources at their true cost to the consumer will we be able to achieve energy security and best serve the needs of the consumer.

Thank you. I will be happy to answer any questions.

[The prepared statement of Mr. Lykins follows:]

Testimony
of
Donald Lykins
on behalf of
The National Oil Jobbers Council

PREFACE

The National Oil Jobbers Council is a federation of 42 state and regional trade associations representing thousands of independent small business petroleum marketers. Members include gasoline and diesel fuel wholesalers, commissioned distributors of gasoline, gasoline reseller-retailers and a large number of retail fuel oil dealers. Members also wholesale or retail many other petroleum products, including kerosene, LP gas, aviation fuels and motor oils as well as residual fuel oil. Together our members market approximately 50 percent of the gasoline and 90 percent of the home heating oils sold in America under either their own private brand or the trademark of their supplier.

Good morning Mr. Chairman and members of the Committee. My name is Donald Lykins and I am President of Lykins Oil Company, an independent petroleum product distributorship in Milford, Ohio. I am here today to represent the National Oil Jobbers Council, a federation of 42 state and regional trade associations representing approximately 18,000 small independent petroleum product marketers. The independent marketing segment represented by NOJC sells 85 percent of the home heating oil and 40-50 percent of the gasoline used in this country. There are three basic issues I would like to discuss with you today: the impact of the Natural Gas Policy Act on heating oil dealers and the millions of consumers in the 16 million residential units using home heating oil; the overall impact of deregulation of natural gas; and, pending natural gas deregulation proposals.

The Impact of NGPA on Consumers and Dealers

The forgotten consumer - homeowners using alternative fuels in this natural gas discussion cannot be ignored any longer. Specifically, the Natural Gas Policy Act has played havoc with the heating oil market. Congress must address the artificial price disparity between natural gas and heating oil in order to establish equity and stability in this marketplace. By artificially pricing the cost of natural gas well below its replacement value, the Natural Gas Policy Act of 1978 effectively legalizes predatory pricing. As a result, many of the thousands of small independent dealers, who perform a vital role in the energy industry but must compete against subsidized natural gas prices, have been forced out of business. Unfortunately, this is happening not because their product, equipment, or operation is inefficient, but strictly due to federal price regulation that has placed a severe inequity in the energy marketplace.

A further result of the NGPA relates to actions of the gas utilities which are directly attributable to the regulation of gas prices. Residential heating oil consumers are being victimized by gas utilities trying to convert them through multi-million dollar advertising campaigns. The advertising program is premised on the price constraints provided by the Natural Gas Policy Act of 1978. Heating oil marketers have lost more than 500,000 customers per year over the past several years primarily due to this price subsidy. This campaign continues, despite the fact that historically in cold weather the gas utility industry cannot adequately supply the needs of its customer load. These conversions have had a devastating impact on the heating fuel marketer. The oil distribution system must be preserved and kept viable. Marketers do not want a federal subsidy or protection like that given gas utilities; we only want the government subsidy removed so that our heating fuel marketers can compete on an equal footing with natural gas utilities.

Conversions also are generally not in the best economic interest of the consuming public. A June 1981 report by the Consumer Energy Council of America (CECA) states that, "For the vast majority of heating oil consumers, conversion to gas is far from the best choice. For 95% of consumers, it is not even a reasonable consideration." CECA goes on to say, "If conversion takes place at the expense of retrofit it will be a significant loss to both the consumer and this nation for we have shown that conservation measures can save more energy than conversion at a lower cost and with a faster rate of return."

The greatest irony to the present situation in which our dealers find themselves is that the average heating oil dealer is a small, entrepreneur-type energy businessperson risking his business and capital with no guarantee of a return on investment, while our chief competitors, the natural gas utilities, are monopolies, guaranteed fixed rates of return on their investment and federal price protection under the NGPA.

The Impact of Deregulation

Recently, there have been several exaggerated predictions by some opponents of deregulation that the price of natural gas to consumers will skyrocket and cause cataclysmic impacts if natural gas is deregulated. The same claims were made about the impact of oil decontrol. Any observer of today's petroleum product market must concede that there has been a significant erosion in prices and gains in supply resulting from changes in consumer energy use and increased production. These anti-deregulation "sky is falling" advocates are misleading the public with grossly distorted claims and highly questionable assumptions underlying their arguments. Our experience in the heating oil industry, which has been decontrolled since 1976, is worth noting.

Heating Oil Markets Under Oil Decontrol

Since decontrol, consumers and the industry have been successfully responding to higher prices through increased efficiency. This has occurred partially by turning down thermostats, but more importantly through more efficient use of the energy they purchase. As an industry we have been at the forefront urging our customers to conserve and showing them how to do so. Fuel oil dealers have been actively involved in performing home energy audits and suggesting ways consumers can upgrade existing oil heat equipment for maximum efficiency and real dollar savings. A recent survey conducted by NOJC showed that heating oil dealers estimate a 10-20% loss in fuel oil sales volume during the past twelve months alone as a result of conservation and increased efficiency. In addition, oil heat equipment manufacturers have rapidly developed more efficient oil heat equipment. In fact, it may surprise you to know that oil heat equipment has a higher seasonal efficiency than natural gas equipment. The standard average seasonal efficiency for oil-fired units is 76 percent, while the standard average seasonal efficiency for gas-fired units is 65 percent. Except for the artifically regulated low rates given our competitors and their customers, heating oil consumers have the superior fuel and more efficient equipment with which to burn that fuel.

According to a study written by DOE analysts, Eric Hirst and John Trimble of Oak Ridge, Tennessee, entitled: "Analysis of Household Primary Heating Fuel Consumption: Natural Gas and Oil," consumers who heat with natural gas use 22-32 percent more energy than do consumers who heat with oil. Quoting from the preliminary draft:

"..... Raising the price of natural gas from its 1978 value of $2.75/MBtu to 90% of the May 1981 price of fuel oil ($6.00/MBtu) would cut gas use by 30-45 MBtu (22-32%). If the natural gas price increased to 100% of the May 1981 price of fuel oil ($6.60/MBtu), then consumption would drop by 35-50 MBtu/year (27-38%). In other words, if decontrol of natural gas prices led to an increase in the average residential gas price to 90% of the average price of fuel oil, gas use (within a couple of years) in gas-heated homes would be cut by 22-33%, based on the regression equations developed here. In the long-run, as households respond to higher gas prices by improving the thermal performance of their structures, increasing the efficiency of their gas-burning equipment, and/or switching to other fuels, gas use might decline even more." There are significant conservation gains to be made by natural gas consumers given the proper price incentives.

The heating oil industry has also worked effectively to help low income consumers meet the higher costs of heating their homes. The need for effective energy assistance programs for low income and elderly is evident. This past year NOJC strongly supported budget provisions which allowed use of some LIEAP funds for the weatherization of low income homes, including furnace upgrading. A one-time expenditure for a furnace retrofit can produce fuel oil savings of 20-35 percent per year for a period of ten years. An energy assistance program which includes furnace upgrading allows benefits to be provided to a greater number of people. The advantages of such a program were demonstrated in Philadelphia under a Department of Energy pilot program supported by many of the local heating oil dealers NOJC represents.

Deregulation Proposals

Deregulation under the NGPA is working imperfectly and proposals to continue regulation after 1985 would only benefit a few gas consumers and producers while causing supply shortages and dislocations for many others. To avoid chaos and inequity, all natural gas prices should be deregulated not later than 1985. To this end, we commend Senators Johnston and Long and Representative Gramm for their farsighted efforts toward achieving a workable solution to the problems caused by the NGPA.

They and others have shown they are dedicated to avoiding any piecemeal legislative modification of the NGPA and that a complete legislative overhaul is required in order to address current and future problems.

Federal Energy Regulatory Commission Activities

One additional point needs to be made with respect to the Federal Energy Regulatory Commission (FERC) efforts to review the pricing regulations and accelerate the prices of certain categories of natural gas. "Just and reasonable" acceleration of certain natural gas prices is within the power granted to FERC by Congress in the NGPA. The FERC Commissioners and staff have clearly shown that they do not intend to take precipitous action nor accelerate certain natural gas prices to "just and reasonable" levels without thorough review and public comment. We find fault only in that it appears the Commission is less willing to move at the expeditious pace they are entitled to by law.

Conclusion

To the consumer, the value of a fuel is not only the cost of the fuel itself, but the value of the comfort it provides. The value of this comfort is the same, no matter the source. The preferential treatment of the residential user of natural gas is grossly unfair to those consumers who heat their homes with heating oil or electricity. Petroleum, natural gas, coal and nuclear are our prime sources of energy and will continue to be well into the next decade, as alternative sources can be developed. Until that time, energy policy should promote the efficient use of these fuels by allowing them to compete in the market and priced accordingly. Only with consistent policy to efficiently utilize all domestic energy resources at their true cost to the consumer will we be able to achieve energy security and best serve the needs of the consumer.

MEMBERS OF THE NATIONAL OIL JOBBERS COUNCIL

NOJC represents these member associations:

Alabama Petroleum Marketers Association
Arizona Oil Marketers Association
Arkansas Oil Marketers Association, Inc.
California Independent Oil Marketers Association
Colorado Petroleum Marketers Association
Independent Connecticut Petroleum Association
Delaware Petroleum Marketers Association
Florida Petroleum Marketers Association
Georgia Oilmen's Association
Idaho Oil Marketers Association
Indiana Oil Marketers Association, Inc.
Intermountain Oil Marketers Association
Iowa Independent Oil Jobbers Association
Kansas Oil Marketers Association
Kentucky Petroleum Marketers Association
Louisiana Oil Marketers Association
Maine Oil Dealers Association
Michigan Petroleum Association
Mid Atlantic Petroleum Distributors Association, Inc.
Mississippi Petroleum Marketers Association
Missouri Oil Jobbers Association
Montana Chapter, Intermountain Oil Marketers Association
Nebraska Petroleum Marketers, Inc.
Independent Oil Men's Association of New England
Better Home Heat Council of New Hampshire
Fuel Merchants Association of New Jersey
New Mexico Petroleum Marketers
Empire State Petroleum Association
North Carolina Oil Jobbers Association
Ohio Petroleum Marketers Association
Oklahoma Oil Marketers Association
Oregon Oil Jobbers Association
Pennsylvania Petroleum Association
South Carolina Oil Jobbers Association
South Dakota Independent Oilmen's Association
Tennessee Oil Marketers Association
Texas Oil Marketers Association
Virginia Petroleum Jobbers Association
Washington Oil Marketers Association
West Virginia Oil Jobbers-Distributors Association
Oil Jobbers of Wisconsin, Inc.
Wyoming Petroleum Marketers Association

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Senator Nickles. Thank you, Mr. Lykins. Mr. Cohn?

STATEMENT OF DR. LEONARD A. COHN, VICE PRESIDENT, ENERGY AND MATERIALS MANAGEMENT, MONSANTO CO., ON BEHALF OF THE CHEMICAL MANUFACTURERS ASSOCIATION

Dr. Cohn. Mr. Chairman, members of the committee, I am Leonard A. Cohn, vice president, Energy and Materials Management, for the Monsanto Co. I appear today on behalf of the Chemical Manufacturers Association.

My written testimony which I will submit for the record covers three major issues—first, the failure of the NGPA.

Senator Nickles. Could you pull the mike up just a little bit?

Dr. Cohn. Second, the economic impact of gas decontrol, and third, the CMA's recommendation for legislative corrections. I will touch upon only a few key points in my oral testimony which the CMA is presenting for your consideration.

Natural gas is important to the chemical industry. Our industry consumes about 25 percent of the industrial use and over 10 percent of our Nation's total use. Over half of this gas is nonsubstitutable gas that is used for feedstocks or specialized process applications.

CMA testified before this committee last November about the failures of the NGPA. That testimony remains valid today. We believe the act leads to inadequate economic incentive for both supplies and conservation.

Since 1970, this Nation has consumed 32 percent of its proven natural gas reserves. Finds of new reserves has improved of late and conservation plus the current state of the economy is retarding demand somewhat. Our Nation's net proven reserve position continues to decline. The NGPA not only sends false economic signals to both producers and consumers, it also causes economic distortions across our Nation's consumers.

The inequitable distribution of the price controlled gas cushion created by the NGPA continues to concern us. This presents a problem to the chemical industry not only in Texas and Louisiana but the impact stretches from Louisiana to Missouri, to California, and it is not a statewide problem but a problem for that part of the State and that part of the chemical industry which may be suppressed by a disadvantageous pipeline system.

During the past year much has been written about the virtues and evils of natural gas decontrol. Because of the wide range of opinions being expressed, the CMA commissioned a study by an independent consultant, an expert familiar with the intricacies of the natural gas industry. We asked him to compare and analyze the validity and reasonableness of 10 of the more widely distributed reports on the subject. I have attached a copy of this study by Foster and Associates to my written submission in this hearing.

In brief, Foster found two of the reports, one by the Office of Policy, Planning and Analysis of the DOE, and the other by Standard Oil Co. of Indiana, to be decidedly more comprehensive and realistic than the others. Although these two studies perceive the problems of the NGPA much differently, both show the substantial long-term economic benefit phased decontrol can bring to our Nation.

Four other studies were found to generally support the conclusion of the OPPA and Standard Oil, although they were less comprehensive and less well documented.

At the other extreme, there were three studies which Foster found to predict, "unrealistically high retail gas prices without considering the benefits of higher prices." The benefits Foster referred to are related to price elasticity of supply and demand, consumer action such as conservation, producer actions such as increased drilling.

CMA's recommendations for new legislation is stated in our January 8 response to the questions of the committee. CMA supports legislation to achieve phaseup of all natural gas ceiling prices to market clearing levels by an early date.

Second, free market access for all consumers, pipelines, and distributors to all categories of gas, including gas from the Outer Continental Shelf, and third, coordinated removal of all supply and demand constraints, including all price controls and the incremental pricing provisions of the NGPA and the major fuel burning installation provisions of the Fuel Use Act; in conclusion, I would like to suggest we should utilize the free market.

Now Senator Johnston in introductory comments for his proposed legislation said it very well, and I quote him, that a free market, not Federal price controls, is the way to keep natural gas prices down.

I am convinced that the sooner we can remove the supply constraints and the demand distortions created by the NGPA, the sooner natural gas can take its rightful place as one of the major elements in the long-term energy security of our Nation.

Thank you, gentlemen.

[The prepared statement of Dr. Cohn follows:]

STATEMENT OF THE
CHEMICAL MANUFACTURERS ASSOCIATION

PRESENTED BY
LEONARD A. COHN
BEFORE THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
CONCERNING SHORTCOMINGS
OF THE
NATURAL GAS POLICY ACT
MARCH 23, 1982

My name is Leonard A. Cohn. I am Vice President, Energy and Materials Management, the Monsanto Company. I am appearing today on behalf of the Chemical Manufacturers Association (CMA).

CMA is a nonprofit trade association having 185 United States company members representing more than 90% of the production capacity of basic industrial chemicals within this country. Our members constitute the largest industrial consumer of natural gas, and they represent a broad industrial consumer interest on the question of natural gas regulation. The chemical industry consumes about 25% of all industrial natural gas, which amounts to over 10% of the

United States total natural gas use. About one-third of our use is for feedstocks, and the balance for process fuel and other uses. CMA companies depend upon both the intrastate and interstate natural gas systems in the United States for their critical supplies of natural gas. Over 50% of the chemical industry use, approximately 1 trillion cubic feet per year is nonsubstitutable.

We appreciate the opportunity to testify today. When we appeared before the Committee in November, we discussed problems arising under the Natural Gas Policy Act (NGPA). Problems resulting from this legislation will increase with time, and will be even more serious in 1985 with the completion of partial decontrol under the NGPA.

NGPA FAILURES

Failures of the Act are partially masked by a temporary decrease in industrial gas demand caused by the current recession. The nation cannot depend upon low economic activity to balance natural gas supply and demand. An objective analysis continues to identify four serious shortcomings of the Act:

- The NGPA has failed to provide adequate incentive for increased supply;
- The NGPA perpetuates disparities in pricing and supply;
- The NGPA does not encourage efficient use of all national energy resources, and
- The NGPA cannot balance supply and demand.

The NGPA has failed to provide adequate incentive for increased supply.

The chemical industry is concerned primarily with adequacy of natural gas supply, both short-term and long-term, for those feedstock and process needs which are not readily substitutable.

Additions to natural gas proven reserves since passage of the NGPA indicate a possible long-term supply problem. Approximately, 32% of the proven reserves have been consumed since 1970.[1/] The annual rate of reserve additions has

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[1/] "20th Century Petroleum Statistics, 1981", DeGolyer and MacNaughton (compilation of data from AGA and DOE).

improved, but reserve additions still do not exceed current consumption.

Producers are responding to the decontrol of oil by tilting exploration and drilling programs in favor of oil. Under the NGPA, the gas drilling incentives are misdirected in favor of the higher risk and higher cost natural gas sources. Consequently, there has been a substantial increase in gas wells drilled deeper than 15,000 feet with attendant higher production costs and higher risk. Nineteen eighty-one figures indicate that gas well drilling increased by 14% over 1980. By contrast, oil well completions increased 39% in 1981 under the stimulus of a totally decontrolled market. In fact, there is a strong indication that gas associated with increased oil drilling is largely responsible for the additions to gas reserves.[2]

The NGPA perpetuates disparities in pricing and supply

The NGPA does not unify the intrastate and interstate gas markets. The continuation of wellhead price controls on old flowing gas perpetuates disparities among pipelines throughout the nation. An independent forecast indicates that in 1985, gas acquisition costs for 23 major interstate pipelines will vary by more than 100%, and the delivered cost from wellhead to the burner tip will vary even more because of the difference in distribution costs.[3/] This extreme variation results from a failure of the NGPA to decontrol all categories of gas. The possible fly-up in prices for deregulated gas upon partial NGPA decontrol in 1985, occasioned by the cushion of controlled low cost gas by some pipelines, will have serious negative impact upon the competitiveness of the domestic chemical industry in world markets. The chemical industry's $11 billion positive balance of payments enjoyed by the United States in 1981 will be further jeopardized. This will result in the unnecessary loss of jobs. Natural gas acquisition disparities caused by the NGPA are not confined to onshore supplies. Intrastate piplines are prohibited from bidding on gas, prospective and "rollover," produced on the Outer Continental Shelf (OCS). Barring intrastate pipelines and consumers from bidding on

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[2] Source: American Petroleum Institute, March 1982.

[3/] Foster Associates, Inc. Projected Gas Costs of Interstate Pipelines, Sept. 17, 1980 (sponsored by the Petroleum Energy Group).

this OCS source eliminates free-market competition for these supplies which are the most significant prospect for new production.

The NGPA does not encourage efficient use of national energy resources

The NGPA impedes conservation activities by regulating natural gas prices below commodity values. Increased conservation will result from higher prices. Accurate price signals are by far the most important factor encouraging conservation. The chemical industry has responded, and will continue to respond to higher energy prices. CMA data reported to the Department of Energy show that the energy price increases from 1972 to 1980 resulted in a chemical industry efficiency improvement of 22% per unit of output.

Switching to more abundant domestic fuels is also discouraged by the NGPA. Price controls understate the true price differential between gas and alternate fuels such as coal. Consumers are reluctant to commit capital to fuel switching projects because of the uncertainty of substance and timing of needed government action to correct the failures of the NGPA.

NGPA cannot balance supply and demand

In 1978, Congress recognized that controlling the price of gas below its commodity value under title I of the NGPA would encourage demand to exceed even the most optimistic supply estimate. Consequently, market ordering devices to curtail gas consumption, including incremental pricing provisions and gas use prohibitions of the Fuel Use Act, were instituted. These devices have failed as substitutes for market forces in balancing supply and demand.

The Chairman of the Federal Energy Regulatory Commission (FERC) acknowledges that incremental pricing has not contributed to solving the market ordering problem, and that it is a significant defect of the NGPA with its scheme of partial deregulation. Current pipeline purchased gas adjustment filings with the FERC indicate that many clearly exceed market clearing price levels despite incremental pricing.[4]

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[4] C. M. Butler, III, Chairman, FERC. Remarks before the Cleveland Chemical Association, Cleveland, Ohio, October 9, 1981.

In July of 1981, Congress repealed the prohibition against utilities burning gas in their boilers after 1990, removing the largest demand restraint. Utility boilers consume about 3.8 TCF. This repeal, coupled with the lack of adequate supply incentives under the NGPA, creates a very serious potential for gas shortages.

These shortcomings are obvious to chemical industry managers seeking long-term competitive feedstock and fuel supplies. The states affected by gas curtailment, plant closures and higher incremental gas prices will recognize the negative impact of NGPA on jobs and the local economy. The secondary impact of shortages of products derived from gas in states other than the state of manufacture will result, but will be more difficult to recognize. For example, regional disruptions suffered by the petrochemical industry dependent upon intrastate gas in states such as Texas and Louisiana will be felt in other regions. Since these petrochemicals are basic raw materials for other industries, negative impacts of intrastate gas shortages will be felt by derivative industries in consuming states -- plastics in New England, rubber and automobiles in the Midwest, synthetic fibers and textiles in the Southeast and food packaging in California.

FOSTER COMPARATIVE ANALYSIS OF NATURAL GAS STUDIES

CMA has been concerned that the perception of NGPA's failures to gas consumers is not universally understood. Since 1978, total natural gas decontrol has been a subject of much public debate. The public -- and to some extent industry -- has been besieged, confused, and misled by the many and conflicting studies comparing the results of total decontrol of all natural gas to the partial decontrol of NGPA.

In order to compare and analyze the validity and reasonableness of the ten most widely distributed and varying studies, CMA commissioned Foster Associates, Inc. to prepare an independent analysis. This study is appended to our written comments, and we request that it be included in the record of this hearing.

Based on this independent analysis, it is clear that those who have insisted that total decontrol is unnecessary to meet future gas needs have exaggerated the negatives--and understated the benefits--of full phased decontrol.

As the largest industrial consumer of natural gas, the chemical industry would like to believe that decontrol isn't necessary. But the facts simply don't support this argument. The Foster analysis cuts through the rhetoric, the claims, and the counterclaims, of the real impact of total phased decontrol. The following remarks are excerpted from the Foster Report Executive Summary.

"Of the ten studies, two are decidedly more comprehensive and represent the most realistic assessment. The two studies are 'A Study of Alternatives to the Natural Gas Policy Act of 1978,' DOE Office of Policy, Planning, and Analysis (OPPA), and 'A Series of Papers of Decontrol of Natural Gas Prices,' Standard Oil of Indiana (Amoco). These two studies show substantial economic benefits to the Nation arising from phased total decontrol . . .

"Three other studies differ markedly with OPPA and Amoco on the benefits of phased total decontrol. The three are: 'Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans,' (American Gas Association); 'Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms,' (Citizen/Labor Energy Coalition); and 'The Decontrol of Natural Gas Prices, a Price Americans Can't

Afford,' (Energy Action). These three predict unrealistically high retail gas prices without considering the benefits of higher prices. In large measure, the findings of these three studies result from exaggerated and unsupportable field price projections and hence contribute little to a rational analysis of the decontrol issue . . ."

"Four of the remaining five studies generally support the conclusions of the OPPA and Amoco studies in regard to the benefits of total decontrol.

"In general, review of the analysis underlying the ten studies permits several reasonable inferences to be drawn in regard to the benefits and costs of phased total decontrol compared to NGPA.

- Reduction of regional pricing disparities
- Enhanced gas supply (e.g., as much as a 9 percent in Lower 48 production)
- Improved resource allocation
- Reduced energy imports (e.g., 600,000 Bbls/day)
- Increased GNP in the long-term
- Moderately negative to neutral impact (depending on extent and duration of phasing) on near term GNP and employment (e.g., a 0.1 to 0.2 percent point increase in unemployment)

- An earlier increase in inflation offset by a later decrease in inflation
- Higher gas prices in most gas markets through 1984 (e.g., a 12 to 17 percent increase in residential rates during the first year)

"Review of the studies leads to the conclusion that there are major long-run national economic benefits to be gained from phased total decontrol that outweigh potential adverse repercussions. Therefore, that national debate should not be whether decontrol will improve economic efficiency but rather which phased decontrol scenario provides the best combination of economic efficiency and macroeconomic impact. As stated by the Cabinet Council:

> The basic trade off among these options is between the magnitude of the first year consumer impact and the size of the efficiency gains. In general, smaller price increases also lead to smaller efficiency gains and vice versa."[5]

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[5] "A Comparison and Appraisal of Ten Natural Gas Deregulation Studies" Foster Assoc., Feb.16, 1982.

RECOMMENDED LEGISLATIVE CHANGES TO THE NGPA

The Natural Gas Policy Act of 1978 (NGPA) must be legislatively corrected to avoid continued market disorder, national inefficiencies, and future regional gas shortages. FERC has the authority and responsibility under NGPA to investigate and promulgate rules to mitigate market distortions and provide adequate production incentives. However, new legislation is necessary to correct the basic problems of NGPA. CMA recommends the following:

- The coordinated removal of both supply and demand constraints.

  This includes the simultaneous, phased elimination of all price controls. The demand constraints which should be repealed on enactment of new legislation include incremental pricing provisions of the NGPA and the major fuel-burning installation provisions of the Powerplant and Industrial Fuel Use Act (FUA).

- Smooth and orderly phase-up by a date certain of all natural gas wellhead ceiling prices to market clearing levels.

  The removal of all price controls on all new and existing supplies of gas in both interstate and intrastate markets should be initiated and completed simultaneously. Phased decontrol by a date certain will mininize economic shock and will provide users adequate time, perhaps three years, to prepare for total deregulation. Such preparation could include capital investment for increased conservation and use of alternate fuels.

- Free market access for all consumers, pipelines and distributers to all categories of gas, including gas from the Outer Continental Shelf (OCS).

Free market competition will enhance distribution and development of all supplies. Also, the OCS is one of the most significant prospects for new production. There is no basis for distinguishing between gas in interstate and intrastate markets. In fact, current access restrictions under the NGPA substantially reduce national economic efficiency. For example, available resources are largely devoted to developing costly deregulated deep gas at unnecessary expense to all consumers. The free market will determine the optimum development, distribution and use of natural gas resources.

The gain from timely enactment of new natural gas total phased decontrol legislation incorporating these major elements will be for all segments of the natural gas market -- producers, pipelines, distributors, and consumers -- through greater assurance of adequate future supply, removal of competitive inequities, fostering of conservation in response to accurate price signals, and the balancing of supply and demand through market forces.

Let us not fear the free market. It easily solves supply/demand problems too complex for any of us to predict. Only a short time ago, the opponents of decontrol were making dire predictions of the consequences of decontrolling the price of oil. However, recent history has made clear that the price of oil did not rise -- it fell.[6]

The chemical industry is dependent on the availability of natural gas at competitive prices. Total phased decontrol of all natural gas wellhead ceiling prices will enhance energy competition and provide a sound basis for growth of all sectors of the U.S. economy.

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[6] Refinery Acquisition Cost of crude oil - composite, "Monthly Energy Review," DOE/E7A - 0035(2/82).

A COMPARISON AND APPRAISAL OF TEN NATURAL GAS DEREGULATION STUDIES

EXECUTIVE SUMMARY

At the request of the Chemical Manufacturers Association, Foster Associates has analyzed ten recent studies dealing directly or indirectly with ultimate (phased or immediate) total decontrol of natural gas prices. The table on the last three pages of this Summary provides a brief synopsis of the ten studies. This Summary evaluates the implications and key results of these studies with respect to the impact of phased total decontrol on gas prices, gas supply and the U.S. economy.

The ten studies present differing opinions concerning the impact of decontrol. They also vary in terms of apparent purpose, depth, levels of sophistication, and scope. More importantly, the studies vary widely in their treatment of gas prices under Natural Gas Policy Act (NGPA) as compared to ultimate (phased or immediate) total decontrol. These assumptions or predictions largely influence the findings of the studies in terms of impact on consumers, GNP, employment, and inflation. For example, a study based on very low price predictions under NGPA compared with very high price predictions under phased total decontrol price leads to a projection of a very high incremental cost in the case of total decontrol. A large increase in inflation would naturally result.

Of the ten studies, two are decidedly more comprehensive and, although different in important ways, represent the most realistic assessments. The two studies are "A Study of Alternatives to the Natural Gas Policy Act of 1978," DOE Office of Policy Planning and Analysis (OPPA), and "A Series of Papers on Decontrol of Natural Gas Prices," Standard Oil of Indiana (Amoco). These two studies show substantial economic benefits to the Nation arising from phased total decontrol, despite the fact that the two perceive the problems of NGPA much differently.

Three other studies differ markedly with OPPA and Amoco on the benefits of phased total decontrol. The three are: "Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans," American Gas Association [AGA (November)]; "Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms," Citizen/Labor Energy Coalition (Bleak Harvest); and "The Decontrol of Natural Gas Prices, a Price Americans Can't Afford," Energy Action (Energy Action). These three predict unrealistically high retail gas prices without considering the benefits of higher prices. In large measure, the findings of these three studies result from exaggerated and unsupportable field price projections and hence contribute little to a rational analysis of the decontrol issue.

Four of the remaining five studies generally support the conclusions of the OPPA and Amoco studies in regard to the benefits of total decontrol. The fifth, another AGA study (April) only addresses immediate total decontrol and focuses on its impact on low income gas users. The AGA (April) study assumes much lower decontrolled gas prices than the AGA (November) study, but presumably AGA's position on decontrol is the same.

All the studies indicate the obvious: earlier decontrol will raise gas prices faster than NGPA in the near term. More importantly, the studies indicate a number of problems with the phased partial decontrol scheduled by NGPA, which a number of the studies indicate could be eliminated by phased total decontrol. The extent of the problems with NGPA differ among the studies, but some of the problems include:

- "Fly Up" -- a price of decontrolled gas above market value due to the existence of below market priced (controlled) gas
- Regional pricing disparities -- unequal distribution of low and high priced gas
- Inefficient resource allocation arising from a panoply of NGPA price categories
- Price "spike" in 1985 -- a large sudden increase in gas prices as significant quantities of gas are decontrolled

In general, review of the analysis underlying the ten studies permits several reasonable inferences to be drawn in regard to the benefits and costs of phased total decontrol compared to NGPA.

- Reduction of regional pricing disparities
- Enhanced gas supply (e.g., as much as a 9 percent in Lower 48 production)
- Improved resource allocation
- Reduced energy imports (e.g., 600 MBD)
- Increased GNP in the long term
- Moderately negative to neutral impact (depending on extent and duration of phasing) on near term GNP and employment (e.g., a 0.1 to 0.2 percent point increase in unemployment)
- An earlier increase in inflation offset by a later decrease in inflation

- Higher gas prices in most gas markets at least through 1984 (e.g., a 12 to 17 percent increase in residential rates during the first year)

Review of the studies leads to the conclusion that there are major long-run national economic benefits to be gained from phased total decontrol that outweigh potential adverse repercussions. Therefore, the national debate should not be whether decontrol will improve economic efficiency but rather which phased decontrol scenario provides the best combination of economic efficiency and macroeconomic impact. As stated by the Cabinet Council

> The basic tradeoff among these options is between the magnitude of the first year consumer impact and the size of the efficiency gains. In general, smaller price increases also lead to smaller efficiency gains and vice versa.

A. Gas Prices

There are many uncertainties with respect to future price levels under NGPA or phased total decontrol. A key factor pertaining to NGPA partial decontrol is the amount of fly up, or the extent to which decontrolled gas prices will exceed market clearing levels in 1985 due to the existence of low priced gas. In other words, how high will decontrolled gas prices rise under partial decontrol.

OPPA and Amoco differ on fly up under NGPA, but each represents a plausible boundary on the subject. OPPA projects maximum realistic fly up; Amoco projects minimal realistic fly up. Aside from the fly up issue, of the two studies OPPA provides a more comprehensive and detailed review of NGPA pricing for NGPA categories other than decontrolled gas. The two studies in conjunction may be assumed to represent the range of plausible gas prices in the field and delivered to consumers under NGPA and phased total decontrol. Thus, the table on the following page compares the Amoco and OPPA projections of gas prices under NGPA.

A review of this table yields a number of conclusions. First, there will be significant gas price increases under NGPA. For residential users, OPPA projects a 53 percent real increase between 1982 and 1985, while Amoco projects a 48 percent increase. Most of this increase occurs in 1985, the first year of decontrol of most new gas. Between 1985 and 1990, OPPA projects an increase of 12 percent and Amoco projects an increase of 28 percent in residential gas prices under NGPA. Thus, both show a large real increase in gas prices for 1985 under NGPA, moderating thereafter.

The impact of phased total decontrol on gas prices is also shown on the table. Due to the presumed level of fly up under NGPA, OPPA shows very little difference between phased total decontrol and NGPA in 1985 and beyond. Amoco, with little fly up projected for NGPA, shows higher price increases under phased total decontrol.

It should be noted that the projected percentage increase in field prices received by producers is higher than the increase in prices paid by residential users. This is due to substantial fixed transportation and distribution costs involved in delivering gas to residential users. Moreover, both these studies project partially offsetting benefits to consumers by virtue of reduced imported gas supply or prices.

The table illustrates the plausible limits of the impact of decontrol, partial and phased total. The two studies differed markedly in major assumptions and projections concerning gas prices. Notwithstanding these dif-

Table 1

PROJECTED PRICES UNDER NGPA
(1981 Dollars per Mcf)

	1982 (1)	1985 (2)	1990 (3)
A. NGPA			
Average Field Prices			
OPPA	$2.47	$4.85	$5.83
Amoco	2.05	3.90	5.25
Average Residential Prices			
OPPA	4.70	7.18	8.02
Amoco	4.50	6.65	8.50
B. Phased Total Decontrol			
Average Field Prices			
OPPA	3.33	5.11	6.00
Amoco	2.60	5.40	6.80
Average Residential Prices			
OPPA	5.52	7.26	8.18
Amoco	5.05	7.70	9.45
C. Percentage Real Increases In Prices Under Total Decontrol Over NGPA			
Average Field Prices			
OPPA	35%	5%	1%
Amoco	27	38	30
Average Residential Prices			
OPPA	17	1	2
Amoco	12	16	11

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ferences, both studies reached the conclusion that total decontrol was in the national interest.

Gas prices represent the first step in the complex economic process of adjusting to decontrol. A related consideration in evaluating decontrol is the impact on gas supply, discussed next.

B. The Relationship Between Gas Supply and Price

Only five of the studies analyzed here address the relationship between domestic gas supply and price. Of the five, three indicate a positive response, one shows no change in Lower 48 production, and the fifth expects a short-run positive response and a long-run negative response.

Amoco projects a significant increase in Lower 48 production under phased total decontrol compared to NGPA, starting immediately and gaining momentum through 1990. AGA (April) finds that during the first five years of total decontrol, there would be more potential flowing new onshore gas than under NGPA. However, these potential increases were not realized due to AGA's projected drop in gas demand. Likewise, the Energy Information Agency (EIA) study, which only goes to 1985, projects an increase in Lower 48 supply under immediate total decontrol, compared with NGPA. It can reasonably be inferred that under phased total decontrol these latter two studies would also project an increased supply response.

On the other hand, Energy Action argues that controlled prices are sufficient "to encourage exploration by most companies." Thus, Energy Action projects no difference in Lower 48 production under all decontrol scenarios. The commentary by Energy Action ignores the obvious -- higher prices will encourage more exploration and development by all companies. This is fundamental economics.

OPPA projects that under phased total decontrol, Lower 48 gas supply would be higher in the short run but lower after 1985. This result reflects the fact that OPPA's supply model is driven by new gas prices only. Since OPPA projects higher decontrolled new gas prices under NGPA than total decontrol, less gas is the result. Moreover, OPPA does not take into account the impact of changes in old gas prices on enhanced gas recovery.

Amoco's results are more consistent with views long expressed by other analysts of natural gas supply economics. It is reasonable to expect a greater increase in domestic gas supply under phased total decontrol than under partial decontrol. For example, higher old gas prices would provide incentives for increased recovery from known reserves as well as greater cash flow for investment in drilling and exploration. Additionally, since NGPA does not decontrol all new gas, total decontrol would provide additional incentives for the development of additional categories of new gas.

Both Amoco and OPPA agree that greater gas supply would be available to high priority users under total decontrol. Total decontrol would eliminate artificial gas demand, leaving more gas for high value uses. However, Amoco stresses the supply side and OPPA the demand side.

Since the precise amount of increased gas supply under phased total decontrol is subject to some uncertainty, the economic consequences of gas decontrol are likely to fall in the range of OPPA and Amoco results. The economic consequences of phased total decontrol versus NGPA are discussed next.

C. Macroeconomic Impacts

Among the studies which measure the macroeconomic impacts of phased total decontrol, there is general agreement that macroeconomic models are inadequate to measure the benefits of microeconomic changes. Hence, results should be viewed as imprecise. Decontrol will yield efficiency gains which will benefit the Nation as a whole, but macroeconomic models are not well suited to assess these gains.

All the studies which provide quantitative estimates indicate overall long run increases in GNP, employment, and Federal, state and local tax receipts. With the exception of Amoco, the studies which provide quantitative estimates also recognized that short term negative impacts might first result, but then would be outweighed by long run positive impacts. Amoco projects immediate increases in the economic benefits for the Nation under phased total decontrol.

Conversely, the Energy Action study suggests dire economic consequences of decontrol, but did not provide estimates on unemployment or drop in GNP. It appears that Energy Action considers the transfer of funds as a complete loss to the economy. Obviously it is not; hence, Energy Action's forecasts of the negative economic effects of phased total decontrol are without merit.

The studies are unanimous that phased total decontrol would initially increase measured inflation compared to NGPA, but after the initial impact, the rate of increase in inflation would be less than NGPA. Any differences are essentially matters of timing and the extent of initial impacts. Table II below shows the estimates on measured inflation.

Table II

COMPARISON OF ESTIMATES OF THE IMPACT OF PHASED DECONTROL ON INFLATION

(Percentage Point Difference in
Year to Year Change from NGPA)

	ESTIMATE			
Year (1)	OPPA (2)	Energy Action (3)	Amoco (4)	Loury (5)
1981	NA	2.43	0.3/per year	0.07
1982	0.2	(0.11)		0.26
1983	0.8	(0.01)		0.44
1984	0.8	0.02		0.54
1985	(0.9)	(1.86)		NA
1986	(0.7)	NA	NA	NA
1987	(0.1)	NA	NA	NA
1988	(0.1)	NA	NA	NA
1989	0.0	NA	NA	NA
1990	0.0	NA	NA	NA

NOTE: A positive number indicates an increase in inflation compared with NGPA and _vice versa_.

The initial impact on inflation is not that substantial, aside from the projection by Energy Action which is based on unrealistic assumptions on gas prices. The studies agree that under NGPA or phased total decontrol, there will be a small increase in measured inflation with the only difference between the two decontrol options essentially one of timing.

Only Amoco and OPPA project the impact of phased total decontrol on energy imports. In Table III, Amoco projects much higher savings based on the anticipated higher domestic gas supply response as well as the fact that higher gas prices will also increase domestic oil production. Based upon the ultimate negative gas supply response under total decontrol, OPPA projects a small increase in oil imports beginning in 1990.

Table III

COMPARISON OF THE EFFECT OF PHASED DECONTROL ON ENERGY IMPORTS; NET CHANGE FROM NGPA
(Thousands of Barrels per Day)

	OPPA	Amoco
1982-1985	636	575
1986-1990	91	1,050

Thus, for the first few years, the two agree that the savings would be approximately 600 MBD. At current oil prices, this is worth nearly $8 billion per year. An average of the two projections for the period 1986 to 1990 would yield approximately the same savings.

D. Synopsis of Individual Studies: The Impact of Ultimate Total Decontrol Versus NGPA

Sheet 1 of 3

SYNOPSIS OF INDIVIDUAL STUDIES: THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
Cabinet Council on Natural Resources and Environment, "Natural Gas Deregulation" (Cabinet Council)	Phasing in deregulation with a broad definition of "new gas" and a high target price for "old gas" will result in higher gas price increases and greater national efficiency gains.	Policy oriented, states crux of issue as tradeoff between higher gas prices in short run and national efficiency gains.
DOE, Office of Policy Planning and Analysis, "A Study of Alternatives to the Natural Gas Policy Act of 1978" (OPPA)	Phased total decontrol will yield $19 billion in national efficiency gains compared with NGPA. Short run macroeconomic consequences on inflation, GNP, and employment outweighed by long-run benefits. Cites infirmities of NGPA — fly up, regional pricing disparities and possibility of extended regulation, the worst case of all.	Most comprehensive and well documented of ten studies; generally reasonable results given assumptions. Assumes the maximum realistic fly up under NGPA; projects ultimate total decontrol eliminates fly up. Underestimates overall national efficiency benefits of ultimate total decontrol largely because gas supply response is understated and fly up under NGPA might be overstated.
DOE, EIA, "Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices," Prepublication Draft (EIA)	Decontrol of old and new gas in 1982 will decrease GNP in 1982 and 1983 and increase GNP thereafter; decrease oil and gas imports throughout the period; and would cause an increase in household expenditures for gas 1982-1984 but decreased household expenditures for gas in 1985. Did not project phased total decontrol.	Results generally appear reasonable, falling in the range of OPPA and Amoco results. However, shows gas prices under immediate total decontrol to be lower than NGPA, in 1985 without explaining why. Lack of documentation in draft renders evaluation difficult.
AGA, "Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans" [AGA (November)]	Assumed decontrolled gas prices at 110% of distillate applicable to nearly all decontrolled gas under NGPA and 60% of all gas under phased total decontrol with the remainder at 70% of crude. Thus projects that wellhead gas prices under NGPA would rise 51% from 1984 to 1985 in real terms ($3.68 to $5.56/MMBtu); under phased total decontrol wellhead gas prices would rise 64% from 1984 to 1985 ($4.22 to $6.93). Projects little difference after 1987.	Questionable basis for major assumptions. Illustrates, albeit in an exaggerated fashion, the potential fly up problem under NGPA. Loses credibility in stretching its case to phased total decontrol.

Sheet 2 of 3

SYNOPSIS OF INDIVIDUAL STUDIES: THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
AGA, "Cost of Immediate Total Wellhead Price Decontrol of Natural Gas to Low Income and Disadvantaged Groups" [AGA (April)]	Immediate total decontrol would produce a large adverse impact on the Nation and on low income groups in particular. The inflation rate would be increased appreciably, demand for gas would drop considerably, and imports of oil would increase. Did not address phased total decontrol.	Much lower decontrolled prices than November study; shows large price increase under immediate total decontrol. Under NGPA and immediate total decontrol, tied decontrolled gas prices to residual fuel oil prices less transportation.
Citizen/Labor Energy Coalition, "Bleak Harvest: The Impact of Natural Gas Decontrol on American Farms" (Bleak Harvest)	The farming industry would be devastated by accelerated decontrol. Fertilizer prices and other production costs would rise dramatically; heating costs would nearly double; electricity prices would rise sharply in Texas, Oklahoma, California and Kansas.	Results based upon unreasonably high prices of decontrolled gas; wholly ignores intrastate situation in projecting fertilizer prices and impact on electricity.
Energy Action, "The Decontrol of Natural Gas Prices, A Price Americans Can't Afford" (Energy Action)	Summary results generally compare different decontrol scenarios (including NGPA) with continued regulations. Shows huge dollar impact on consumers. Cites no advantages to decontrol. Projects that decontrol will increase unemployment, inflation and result in productivity declines.	Dramatically overstates price effects and macroeconomic consequences even under their price projections. Equates gas prices with somewhat high crude oil projections, and assumes very low regulated prices, so shows large near term price effect. Erroneously assumes transfer of funds resulting from higher prices is lost to the economy.
Glen Loury, "An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices," (Loury)	Decontrol would increase inflation initially and cause income redistribution between producers and consumers, but the benefits of increased economic efficiency and reduced dependence on imported oil would outweigh the costs.	Theoretically sound, but gas prices under all decontrol scenarios through 1984 seem unrealistically low.

Sheet 3 of 3

SYNOPSIS OF INDIVIDUAL STUDIES:
THE IMPACT OF ULTIMATE TOTAL DECONTROL VERSUS NGPA

Study	Major Conclusions	Evaluation
Amoco, "A Series of Papers on Decontrol of Gas Prices" (Amoco)	Ultimate total decontrol would result in increased gas and oil production, increased efficiency in transportation and distribution, decreased oil and gas imports, and an overall improvement in the U.S. energy balance. Projects immediate and substantial price impacts on GNP and employment. Assumes decontrolled gas prices to be equivalent to residual fuel oil netted back to the field under all decontrol cases.	Sensible approach to assessing long run national benefits and only study to adequately reflect economics of gas production and the response of gas supply to higher prices. Assumes no fly up under NGPA, so may overstate short run impact of total decontrol on gas prices. Only study to show immediate positive impact of decontrol on GNP and employment, which appears unlikely. However, longer run estimates appear reasonable in light of projected gas supply response.
Mellon Institute, "Eight Great Energy Myths, The Least Cost Strategy." (Mellon)	Study did not address decontrol *per se*. Due primarily to interfuel competition, states that the price of gas will not rise to oil equivalency upon decontrol.	Does not project gas prices; rather discusses possibilities if gas prices were to reach oil equivalency at retail and concludes that gas prices could not without reducing demand and therefore would not.

Senator **Nickles**. Thank you, Mr. Cohn. Mr. Elam?

STATEMENT OF JACK ELAM, VICE PRESIDENT, CONE MILLS CORP., ON BEHALF OF THE PROCESS GAS CONSUMERS GROUP; ACCOMPANIED BY EDWARD J. GRENIER, JR., SUTHERLAND, ASBILL & BRENNAN

Mr. **Elam**. Mr. Chairman and members of the committee, I am Jack Elam, vice president of the Cone Mills Corp. This is a petrochemical company with headquarters in Greensboro, N.C. I appear here on behalf of the Process Gas Consumers Group.

With me is Ed Grenier of Sutherland, Asbill & Brennan in Washington, D.C.

PGC is an organization of industrial consumers of natural gas who own and operate hundreds of plants in virtually every State in the Nation, with most of our facilities served by the interstate gas system. Our members use natural gas in industrial processes in which alternate, nongaseous fuels cannot feasibly be utilized. Thus our primary concern is that there be adequate security of gas supply available to us at reasonable prices. My written statement enumerates PGC's basic positions on some of the general, long-term issues arising in the context of Government regulation of natural gas. We strongly support wellhead price decontrol, nonsubsidized rates based on the cost of service, end use curtailment policy, and responsible policies and load growth and self-help gas.

I will limit my remarks here, however, to some of the more specific issues currently facing natural gas users. May I first emphasize PGC's position that new comprehensive legislation is the only remedy for the major flaws in the gas provisions enacted in 1978. We believe that Congress should promptly re-examine and amend the NGPA and related statutes in order to achieve timely deregulation of natural gas and elimination of discriminatory restraints on gas use, such as NGPA incremental pricing and prohibitions on industrial oil and gas use in the Fuel Use Act.

In our view, the NGPA is not working. Instead, it is producing the worst of all worlds, higher prices, and lower domestic supplies, plus significant price and supply disparities across the country. Since these problems are likely to get worse over the next several years if the NGPA is permitted to run its course, we are encouraged by Senator Johnston's efforts and those of Congressman Gramm in the House toward developing legislative solutions to the serious problems we now face.

With specific regard to Senate 2074, process gas consumers believe that the bill represents a generally sound proposal, but we are seriously concerned about two of its major provisions.

Section 202 of the bill proposes to repeal the FERC's abandonment authority under the Natural Gas Act with respect to gas contracted for before the NGPA was enacted. Such pre-NGPA gas is, however, the base gas supply for the Nation's industrial heartland and it should not be subject to diversion. PGC does not, however, object to the elimination of the FERC's abandonment authority or of first refusal rights with respect to newly discovered gas, to which all parties appropriately should have equal access.

We also strongly object to the provisions in sections 304 and 305 which, in virtually all circumstances, would guarantee that pipelines and distribution companies will be able to recover from their customers whatever gas costs they may incur even if they are incurred as a result of profligate gas purchasing practices. If consumers are helpless to challenge the gas purchasing behavior of their suppliers except where fraudulent behavior is involved as the FERC has recently and we think incorrectly suggested, the rationality of a truly free market will never be established at the wellhead.

I have attached to our written testimony a copy of a petition for rulemaking recently filed at the FERC by PGC and several other industrial user groups, a petition asking FERC to initiate a proceeding to investigate and establish rules to mitigate market distortions under the NGPA. While we continue to believe that legislative action would permit the most comprehensive solution to the problems created by the NGPA we have asked that, pending action, in Congress, the Commission act under its existing legal authority to provide a combination of incentives and disincentives for pipelines and producers with the aim of reducing gas market disorders.

We believe that our proposals present a fair and balanced plan to reduce price distortions, limit the adverse impact of the so-called contract problem, and achieve for the gas consumer more stable gas supplies and prices during the transition to decontrol.

Thank you for this opportunity to present our views to the committee. Mr. Grenier and I will be pleased to respond to any questions you may have, especially with respect to our specific objections to parts of S. 2074 and our rulemaking petition at the FERC.

We will respond to Senator Johnston's question regarding the free contract versus average in writing if that is all right with the committee.

[The prepared statement of Mr. Elam follows:]

TESTIMONY OF
JACK ELAM ON BEHALF OF
THE PROCESS GAS CONSUMERS GROUP

BEFORE THE
UNITED STATES SENATE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

STATEMENT OF THE PROCESS GAS CONSUMERS GROUP

I am Jack Elam, Vice President of Cone Mills Corporation, appearing here on behalf of the Process Gas Consumers Group. Appearing with me is Edward J. Grenier, Jr. of Sutherland, Asbill & Brennan in Washington, D.C.

The Process Gas Consumers Group is an organization of industrial consumers of natural gas organized to promote the development and adoption of consolidated, rational, and consistent federal and state policies with respect to gas use. Our member companies own and operate hundreds of plants in virtually every state in the nation and purchase natural gas directly or indirectly from both interstate and intrastate pipelines, with most of our facilities on the interstate system. A list of the members of PGC participating in this testimony is attached as Appendix A.

I. MAJOR CONCERNS

PGC's views with respect to natural gas issues reflect its members' use of natural gas in industrial processes in which alternate, non-gaseous fuels cannot feasibly be utilized. From this perspective, there are two paramount natural gas issues: (1) security of supply and (2) price. The latter issue encompasses not only price levels vis-a-vis alternate fuels, but also the effects of pricing policies and rate design on the relative rates paid by various classes of gas consumers. In sum, then, members of PGC are concerned with obtaining adequate gas supplies at reasonable prices.

Given the glowing reports emanating from some quarters about plentiful gas supplies, PGC's concern with supply security may seem to some to be unwarranted. However, we vividly remember the acute gas shortages of the mid-1970s; industrial users were among the worst victims of those shortages as plants were closed, employees were laid off, and operations were severely disrupted. That experience seriously eroded industrial users' confidence in the gas system, and that confidence continues to be eroded as the nation continues to consume more gas than is being found (i.e., reserve to production ratios are still declining). Supply continues to be restrained by price controls even as gas consumption in uneconomic uses (e.g., under electric utility boilers) is encouraged and as gas utilities aggressively seek to add new customers to their systems. In addition, although industrial process and feedstock users need to be confident that their gas supplies will be protected in the event that future shortages cause the return of gas curtailments, the Natural Gas Policy Act ("NGPA") has further undermined their confidence by placing low-priority agricultural uses (including large volume, non-farm boiler fuel uses) generally ahead of essential industrial process and feedstock uses.

Thus, PGC members remain skeptical of reports that the Golden Age of Gas has arrived. We fear that the short-term surplus which exists in some areas can and will be used up rapidly if and when oil prices rise, the economy improves, or gas demand is otherwise stimulated as gas prices remain at artificially low, controlled levels.

PGC's other paramount concern with respect to gas is its price. While we are no more anxious than anyone else to see our gas bills increase, we are willing to pay true free-market prices for gas and anticipate that such prices will be more stable -- and perhaps even lower in the long run -- than would be the case under the NGPA. Thus, PGC believes that well-head price controls must be eliminated if supply and demand in the gas market are ever to be brought into balance. However, while we are willing to pay free market prices for gas, we are strongly opposed to paying a disproportionate share of higher gas costs in order to subsidize other gas consumers, such as through incremental or marginal cost-based pricing schemes.

II. BASIC POSITIONS

Having stated our concerns, let me now summarize our basic positions on some of the general issues arising in the context of government regulation of natural gas:

(1) Natural gas rates to distributors and end-users should be based on cost-of-service principles. Pipeline and utility rates should be structured so that each customer or class of customers reimburses the pipeline and utility for the costs which the pipeline or utility actually incurs in serving

that customer or class. No class should be charged rates which cause it to subsidize the rates of any other class. Discriminatory rate schemes, such as incremental pricing and theoretical marginal cost pricing programs, depart from this fundamental regulatory principle and should be rejected.

(2) Pipelines and utilities should be allowed a fair return on investment. Many gas pipelines and utilities are facing financial problems in today's economy because their revenues are not providing an adequate return on investment. Rates should be high enough to allow a sufficient return on investment to insure adequate service without discriminating against any class of customer. By the same token, gas companies should not be allowed a return on investment in excess of what is required for prudent and efficient operations and to attract needed capital.

(3) Wellhead price controls on natural gas should be phased out. Deregulation of natural gas will allow the price of gas to balance supply and demand in the future and reduce the use of arbitrary and artificial mechanisms to "simulate" the workings of the marketplace. More specifically, PGC believes that price controls on newly-discovered natural gas should be eliminated immediately and that price controls on all other gas should be phased out over a time certain. PGC's position on natural gas legislation, including the bill recently introduced by Senator Johnston (S. 2074), is discussed in greater detail below.

(4) Natural gas curtailment plans should be based on the technical and economic feasibility of converting various end-uses of natural gas to alternate fuels; accordingly, high-priority treatment of process and feedstock uses should be a feature of all natural gas curtailment plans. The natural gas shortages of the 1970s required the development of rational curtailment plans to allocate available supplies. End-use based curtailment plans were designed to protect those uses of gas which are the most difficult and expensive -- or even impossible -- to convert to an alternative fuel; those uses which are the easiest and least expensive to convert are the first required to switch to alternate fuels. Since process and feedstock uses of natural gas do not have any technically or economically feasible alternate fuel, such uses should be given a high priority in curtailment plans for interstate pipelines and local distributors. Statutory and regulatory provisions which accord high curtailment priority on the basis of the nature or "social utility" of the end-product produced should be rejected.

(5) Restrictions on the attachment of new gas customers and load should continue unless a utility can demonstrate that it has adequate, proven gas supplies to serve the new load for a reasonable period without jeopardizing service to existing customers. Historically, the Federal Power Commission protected service to customers by requiring a pipeline to prove

that it had a substantial reserve margin before adding new demand to its system. By the end of the 1960s, however, this examination of gas reserves had been abandoned even though reserves were beginning to decline. In order to build security of supply, a pipeline should be required to rebuild its reserve margin before new demands are added to the system.

(6) Efforts by industrial gas consumers to obtain supplemental supplies (self-help gas) should be encouraged. Industrial gas users must be permitted to meet their high-priority gas requirements by resort to such self-help measures from sources outside their existing, traditional supply sources. Federal and state regulatory authorities should develop policies which would encourage pipelines and distributors to transport user-owned gas. Such policies should include provisions permitting the transporting entities to make a full, just, and reasonable profit on such transportation.

III. SPECIFIC PROPOSALS

Having reviewed for you our positions on the major long-term gas issues, I would now like to respond to your request that we comment on the problems that are presently occurring under existing natural gas laws and on the possible solutions to those problems, including Senator Johnston's proposal. At the outset, let me make it clear that, contrary to the claims of some, implementation of the wellhead pricing provisions of the NGPA (Title I) is not proceeding as intended.

Although intended by its authors to provide a mechanism for a smooth transition to a deregulated market, Title I has not worked because of inherent flaws in its structure, erroneous assumptions as to oil prices, and limitations on the FERC's authority to address serious developing problems.

Because of its part-regulated, part-deregulated structure, Title I is severely distorting the exploration and development, distribution, and price of natural gas in the United States. The statute is causing rapidly rising wholesale and retail prices without inducing corresponding increases in gas supplies; it is producing surpluses in some locations while shortages are arising in others; and it is contributing to the demand for energy imports, such as exhorbitantly priced LNG from Algeria. In effect, implementation of Title I may be producing the worst of all worlds -- higher prices and lower domestic supplies, plus significant price and supply disparities across the country. Further, if the NGPA is permitted to play out, the problems are likely to get worse, not better, over the next several years.

PGC's detailed analysis of the effects of Title I was submitted to this Committee in testimony presented on November 6, 1981. That testimony was supplemented on January 8, 1982, by PGC's responses to the Committee's follow-up questions concerning specific legislative proposals, the so-called "contract problem", and the supply and price problems stemming from the uneven distribution of gas subject to permanent price controls under the NGPA. We would respectfully request that both our November 6, 1981 testimony and our January 8, 1982 supplemental testimony be incorporated by reference as part of our statement at this hearing.

As we have previously testified before this Committee, PGC strongly supports amendment of the NGPA, believing that new legislation is the only means of remedying the major flaws in that statute. In PGC's view, Congress should promptly reexamine and amend both the NGPA and related statutes in order to achieve both timely deregulation of natural gas and elimination of discriminatory restraints on gas use, such as NGPA incremental pricing and prohibitions on industrial oil and gas use in the Powerplant and Industrial Fuel Use Act.

In light of our position on natural gas legislation (described in detail in PGC's legislative specifications, set forth in its January 8, 1982 testimony before this Committee), we believe that, with the exception of some key problems discussed below, Senator Johnston's bill (S. 2074) represents a reasonable and workable compromise for eliminating the serious problems arising under existing natural gas laws. I would like to note a few specific comments on some of the bill's provisions:

(1) The bill's complete repeal (in Section 101) of the Powerplant and Industrial Fuel Use Act is a critical element of any gas legislation.

(2) Complete repeal of the incremental pricing program is another essential element of gas reform legislation. While we find acceptable the bill's delegation to the FERC of authority to prescribe rules to terminate NGPA Title II, we believe that the specific mechanism detailed in Section 102 of H.R. 5866, introduced March 17, 1982, by Congressman Gramm, is a preferable approach insofar as it assures that the effects of the incremental pricing program will cease immediately. That mechanism specifically requires gas suppliers to empty their incremental pricing accounts into their PGA accounts rather than to continue to flow through to industrial users the amounts already accrued.

(3) We support the bill's proposed repeal (in Section 103) of Title III of the Public Utility Regulatory Policies Act of 1978.

(4) With most of our facilities served by the interstate system, PGC strongly objects to Section 202 of the bill with respect to deregulation of gas committed or dedicated to the interstate market. This provision repeals the FERC's abandonment authority under the Natural Gas Act with respect to gas contracted for before the NGPA was enacted.

It is important to distinguish such pre-NGPA gas supplies from post-NGPA supplies inasmuch as the former were developed and contracted for under prior law to be the base gas supply for the interstate system serving the industrial heartland. This supply is the underlying basis of gas pipeline bond indentures, and it was purchased under the key assumption that the traditional consuming states of the Northeast, Midwest, and Southeast (where many of our plants are located) would be entitled to use it either until reserves were exhausted or until FERC permitted abandonment. Thus, in contrast with the NGPA's own repeal of abandonment authority with respect to *post*-NGPA gas, Section 202's proposal to repeal such authority with respect to *pre*-NGPA gas should be deleted.

For similar reasons, NGPA Section 315(b) should not be amended (as proposed by Section 403 of the bill) to remove rignts of first refusal as to post-NGPA/pre-S.2074 gas. The bill should eliminate such first refusal rights only with respect to newly-discovered gas -- to which all parties should have equal access.

(5) PGC strongly objects (and anticipates that consumers generally would object) to Sections 304 and 305 of S. 2074 -- provisions which, in virtually all circumstances, would guarantee that pipelines and distribution companies will be able to recover from their customers (*i.e.*, the ultimate consumer) whatever gas costs they may incur, even if such costs are incurred as the result of abusive gas purchasing practices.

Guaranteed cost pass-through provisions, such as those proposed in Sections 304 and 305, would be seriously damaging to industrial users' ability to exert meaningful influence on the purchasing behavior of gas suppliers. One of the major purposes of legislation to deregulate natural gas is, we believe, to establish more effective communication in the gas market between gas producers and end-users. But an efficient gas market can be established only if producers (and the gas companies which purchase from them) are fully aware of how much end-users actually value natural gas.

Customer resistance to high gas prices is an essential element in bringing gas supply and demand into balance. However, the market currently has relatively little ability to reject the higher cost gas supplies. Thus, since the interstate pipelines and local gas utilities are still subject to regulation (and will remain so even after full wellhead price decontrol), the ability of industrial end-users (the nation's largest gas users) to challenge excessive gas acquisition costs in regulatory forums is essential if pipeline bidding practices are to be restrained, especially during the transition to full decontrol.

End-user participation in gas utility rate proceedings is a comparatively recent development. Only in the past ten or so years have industrial users regularly intervened in proceedings traditionally thought to involve only the gas utility and the regulatory agency. But since it is the gas consumer -- residential, commercial, and industrial -- who pays the gas bill, gas consumers are entitled to have an effective say about their gas suppliers' purchasing decisions. Consumers should be able to have their say not only through their consumption behavior (or in court litigation) but also in the regulatory proceedings in which gas company costs are reviewed.

The guaranteed cost pass-through provisions proposed in Sections 304 and 305 of the bill would effectively cut off end-users' ability -- at both the federal and state levels -- to insist that gas companies behave prudently and reasonably. Gas users need to be able to challenge the pipelines and utilities when they abuse their natural monopoly status and their general ability to pass through the costs they incur. If consumers are rendered helpless to challenge the gas purchasing behavior of their suppliers, except where fraudulent behavior is involved -- as the FERC has recently and incorrectly suggested by virtually writing "abuse or similar grounds" out of NGPA Section 601(c)(2) -- the rationality of a truly free market will never be established at the wellhead.

(6) As noted in PGC's January 8, 1982 testimony before this Committee, the Group believes that there is a serious market problem under the NGPA, commonly referred to as the "contract problem." The greatest effects of this problem will

not actually be felt until we approach the NGPA's 1985 date for partial decontrol, but these effects may be clearly predicted now. PGC is pleased that Senator Johnston has included in his bill a proposal for dealing with the contract problem. Notwithstanding the merits of Senator Johnston's proposal, however, PGC believes that a more straightforward approach to the contract problem -- such as capping both indefinite and fixed price escalators at a market "proxy" level for some period of years after the date of decontrol -- might be more effective. While the contract conversion approach contained in S. 2074 is appealing because it would operate in a manner similar to the seller-buyer dynamics in a free market, that approach is considerably more complex than imposition of a temporary cap and, therefore, as a practical matter, could create problems of its own. Its complexity aside, even if S. 2074's contract conversion approach were revised specifically to prevent the operation of above-market fixed price escalators (in addition to indefinite price escalators), there is little assurance that the provision could be framed to give gas purchasers effective protection against all kinds of problem contract clauses drafted to fall outside the bill's definition of "commodity escalator clause" (Section 404(b)), and such clauses could escalate prices above market clearing levels and lead to the kind of market disruptions the bill is intended to avoid.

As stated previously, PGC believes that, with some important exceptions discussed above, S. 2074 is a generally sound proposal for dealing with the serious problems in existing natural gas law. Under the assumption, however, that natural gas legislation would not be enacted this year, PGC and several other associations of industrial gas users have recently asked the FERC to institute a rulemaking proceeding to address the serious natural gas market distortions that are emerging under the NGPA. While we continue to believe that legislative action would permit the most comprehensive solution to the problems created by the NGPA, we have reminded the Commission that, until Congress chooses to act, the Commission has an obligation to initiate whatever reasonable actions it can under its existing legal authority to address the serious market ordering problems now emerging.

PGC's petition outlines a number of steps which the FERC could take within its existing legal authority. These steps include both incentives and disincentives for pipelines and producers and are designed to reduce both current market disorders and, in Chairman Butler's words, the "uncertainty, confusion and delayed institutional responses" which are likely to occur in 1985 and thereafter. */ The rulemaking petition recommends that the FERC consider proposals

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*/ Remarks of C.M. Butler III, Chairman FERC, before the Wall Street Utility Group, Washington, D.C., January 22, 1982.

> (1) to reduce price distortions in the current market by setting more realistic market prices for certain volumes of gas, while achieving for the consumer tangible benefits in the form of reduced market disorder and less drastic price increases after 1984, and
>
> (2) to encourage more reasonable gas purchasing practices and to limit the adverse impact of certain contract terms commonly found in gas purchase agreements today.

A copy of PGC's rulemaking petition (FERC Docket No. RM82-17-000) is attached as Appendix B to our testimony, and we respectfully request that it be included in the record of this proceeding.

The Process Gas Consumers Group appreciates this opportunity to present its views to this Committee. We will welcome the opportunity to work further with the Members and Staff of the Committee in addressing these important natural gas issues.

Respectfully submitted,

Jack Elam

Jack Elam, Chairman
Process Gas Consumers Group

March 23, 1982

APPENDIX A

Members of the Process Gas Consumers Group

Aluminum Company of America

American Can Company

Armco Inc.

Bethlehem Steel Corporation

Borg-Warner Corporation

Burlington Industries, Inc.

Cone Mills Corporation

Corning Glass Works

Dan River Inc.

General Motors Corporation

3M Company

Owens-Corning Fiberglas Corporation

United States Steel Corporation

APPENDIX B

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

In the Matter of:

Petition of The Process Gas Consumers Group, *et al.* to Investigate and Establish Rules Mitigating Market Distortions Under the NGPA)	Docket No. RM82-17

PETITION OF THE PROCESS GAS CONSUMERS GROUP, THE AMERICAN IRON AND STEEL INSTITUTE, ASSOCIATED BUSINESSES ADVOCATING TARIFF EQUITY, THE BRICK PEOPLE, *ET AL.*, AND THE GEORGIA INDUSTRIAL GROUP, FOR THE INSTITUTION OF A RULEMAKING PROCEEDING TO INVESTIGATE AND ESTABLISH RULES MITIGATING MARKET DISTORTIONS UNDER THE NATURAL GAS POLICY ACT

In accordance with Section 553(e) of the Administrative Procedure Act, 5 U.S.C. §553(e), and Section 1.7 of the Commission's Rules of Practice and Procedure, the Process Gas Consumers Group, The American Iron and Steel Institute, Associated Businesses Advocating Tariff Equity, The Brick People, *et al.*, and the Georgia Industrial Group (hereinafter referred to collectively as "The Industrial Groups") respectfully petition the Commission to institute a rulemaking proceeding to investigate and to promulgate rules designed to mitigate the increasing market distortions which are arising under the Natural Gas Policy Act of 1978 ("NGPA"). In support hereof, The Industrial Groups respectfully state as follows:

I.

Communications concerning this petition should be addressed as follows:

Edward J. Grenier, Jr.
Richard P. Noland
Robert W. Clark
William H. Penniman
Sutherland, Asbill & Brennan
1666 K Street, N.W.
Washington, D.C. 20006

II. IDENTITY OF PETITIONERS

The Process Gas Consumers Group ("PGC") is an association of industrial consumers of natural gas organized to promote the development and adoption of coordinated, rational and consistent federal and state policies with respect to industrial gas use. PGC members own and operate hundreds of plants in virtually every state in the Nation. The members of PGC participating in this matter are: Aluminum Company of America, American Can Company, American Standard Inc., Armco Inc., Bethlehem Steel Corporation, Burlington Industries, Inc., Cone Mills Corporation, Corning Glass Works, Dan River Inc., General Motors Corporation, 3M Company, Owens-Corning Fiberglas Corporation, Owens-Illinois, Inc., and United States Steel Corporation.

The American Iron and Steel Institute ("AISI") is the principal trade association of the steel industry. Its 63 domestic member companies account for approximately 92 percent of the raw steel production capability in the United States. (Armco Inc., Bethlehem Steel Corporation, and United States Steel Corporation, members of AISI, are also members of PGC).

Associated Businesses Advocating Tariff Equity ("ABATE") is an association of industrial energy consumers located in the State of Michigan. The members of ABATE, all of whom are substantial consumers of natural gas, are Abitibi-Price Corporation, Bundy Corporation, Clark Equipment Company, Detroit-Strip Division of Cyclops Corporation, Dow Chemical, U.S.A., Edward C. Levy Company, Escanaba Paper Company, Ford Motor Company, General Motors Corporation, Great Lakes Steel Division of National Steel Corporation, Haworth Manufacturing Inc., Hayes-Albion corporation, Huron Valley Steel Corporation, James River Corporation, Kastle Steel Corporation, McLouth Steel Corporation, Michigan Sugar Company, Monitor Sugar Company, Motor Wheel Corporation, Quanex Corporation, Stanley Door Systems, and Wolverine Aluminum Corporation.

The Brick People, Region VI of the Brick Institute of America, and Dickey Clay Manufacturing Co., (the "Brick People et al.") is a group of brick and sewer pipe manufacturers located in the Midwest. The Brick People include Sioux City Brick & Tile Co., Endicott Clay Products Co., Yankee Hill Brick Mfg. Co., Can-Tex Industries, Sheffield Brick & Tile Co., United Brick & Tile Co., and Ochs Brick & Tile Co. All of the members of the group receive natural gas from the Northern Natural Gas Company system.

The Georgia Industrial Group ("GIG") is an organization of industrial users of natural gas located in the State of

Georgia. Participating members of GIG are American Industrial Clay Company of Sandersville, Anglo-American Clays Corporation, Burgess Pigment Company, Engelhard Corporation, Minerals & Chemicals Division, General Motors Corporation, Georgia Kaolin Company, Midland Glass Company, Inc., Nord Kaolin Company, Pabst Brewing Company, and Thiele Kaolin Company.

Members of PGC, AISI, ABATE, The Brick People, et al., and GIG purchase natural gas directly or indirectly from interstate and intrastate pipelines, with most of their facilities on the interstate system.

III. SUMMARY OF PETITION

The Industrial Groups hereby petition the Commission promptly to institute a rulemaking proceeding to address the serious natural gas market distortions that are emerging under Title I and related provisions of the Natural Gas Policy Act of 1978. These distortions are already causing significant inequities and hardships, which are likely to grow substantially worse in 1985. At that time, 50-60 percent of the total interstate gas supply will suddenly be deregulated, typically under contracts whose indefinite pricing provisions -- in the words of FERC Chairman Butler -- "will cause prices for the newly deregulated gas to virtually explode upwards." */

As Chairman Butler has also noted, these explosive price increases "will be severely disruptive of both interstate and intrastate natural gas markets;" and "uncertainty, confusion and delayed institutional responses are likely only to further aggravate [the] disruptive effect." In short, the Nation's "gas markets will be a shambles," and "the consequences are likely to spill out of the gas market into some of this country's most significant industries." (Id).

A rulemaking proceeding to investigate these problems and to develop rules to deal with them is necessary now. Although legislative action might permit the most comprehensive solution to the problems created by the NGPA, the Commission cannot assume that such action will be soon forthcoming. Until Congress chooses to act, this Commission has an obligation to initiate whatever reasonable actions it can under its existing legal authority to address the market ordering problems now emerging.

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*/ Remarks of C. M. Butler, III, Chairman FERC, before the Wall Street Utility Group, Washington, D. C., January 22, 1982.

This petition outlines a number of steps the Commission can take within its existing legal authority. Such steps include both incentives and disincentives for pipelines and producers. They are designed to reduce both current market disorders and the "uncertainty, confusion and delayed institutional responses" which are likely to occur in 1985 and thereafter. The individual proposals outlined below are offered as a comprehensive program to address a variety of problems facing the natural gas industry today. Doubtless, there are other proposals that could be advanced; and the Commission should solicit the recommendations and views of all parties in establishing an effective program to deal with the serious market problems which all observers recognize.

What is critical, however, is that the Commission institute an investigation as soon as possible to determine what actions it can take to mitigate the problems and to adopt rules to guide pipelines and producers in the future. Providing reasonable incentives and generally applicable guidelines, promptly, will greatly help to shape the contracting practices and planning of all affected companies, thereby offering some hope for stability where uncertainty now prevails.

The Industrial Groups recommend that the Commission consider the following proposals:

A. Wellhead Ceiling Prices. The Commission should exercise its authority under Sections 107, 104, 106 and 109 of the NGPA, to modify existing ceiling prices, but only where such modifications would benefit consumers. The Commission should:

(1) offer incentive prices under Section 107 for natural gas discovered and produced in particularly risky or costly settings, provided that the incentive prices are likely to induce new gas exploration, that they do not exceed the levels expected to prevail in a free market, and that contracts for such gas do not contain price escalators (definite or indefinite) which will drive prices above market clearing levels in 1985; and

(2) increase the ceiling prices for certain "old" gas under Sections 104, 106, and 109, of the NGPA to higher "just and reasonable" levels to be

> determined by the Commission, provided that producers who take advantage of the higher ceiling prices first renegotiate price escalator terms in contracts to be deregulated in 1985 to eliminate the possibility of prices exceeding market clearing levels at that time.

These two proposals directly address the present structure of producer prices. They attempt to reduce price distortions in the current market by setting more realistic market prices for certain volumes of gas, while achieving for the consumer tangible benefits in the form of reduced market disorder and less drastic price increases after 1984. The Commission has flexibility under the NGPA and the Natural Gas Act to make ceiling price adjustments on some categories of gas, but only if it is able to demonstrate that such adjustments are of overall benefit to consumers. Simply increasing prices without securing commensurate protection for consumers would not, in The Industrial Groups' view, meet the Commission's obligation to establish just and reasonable rates.

B. Pipeline Purchasing Practices. The Commission should adopt rules applicable to interstate pipelines, under Sections 4 and 5 of the Natural Gas Act and the "fraud, abuse, or similar grounds" test of Section 601(c)(2) of the NGPA, to encourage more reasonable gas purchasing practices and to limit the adverse impact of certain contract terms commonly found in gas purchase agreements today. Such rules would:

(1) prescribe rate mechanisms (e.g., an "incentive rate of return"), under the Natural Gas Act, designed to give pipelines a direct economic incentive to keep deregulated gas costs at the lowest possible level consistent with providing full service to their customers;

(2) restrict, under the Natural Gas Act, future recovery of take-or-pay expenses where a pipeline's take-or-pay commitments exceed certain acceptable levels;

(3) restrict passthrough of extreme gas prices paid by pipelines in 1985 as a result of price-escalator clauses which force prices above the estimated

market clearing level (e.g., 70-80% of the weighted average refiners crude oil acquisition costs); and

(4) establish a rebuttable presumption that prices paid above a realistic market clearing level constitute an "abuse" under Section 601(c) of the NGPA.

These proposals address pipeline gas purchasing practices and concern contracts to purchase not only gas now deregulated under Section 107 of the NGPA, but also gas subject to deregulation in 1985, including Sections 102, 103, and certain 106 gas. These proposals are prompted by the fact that, unless corrective actions are taken, price-escalator and take-or-pay clauses in most new gas contracts will cause very harmful impacts to gas consumers and great disruptions in the natural gas market.

C. Filing Contracts With the Commission. In order effectively to implement the foregoing, the Commission should adopt a rule that would require all first sale purchasers of natural gas for resale under new contracts and all successors to existing or rollover contracts covering gas for resale to file copies of such contracts in the Commission's public files.

IV. FACTUAL BACKGROUND

It is now well documented in government and non-government studies, in Congressional testimony, and in documents on file with the FERC that serious supply and price problems are arising within the NGPA's part-regulated and part-deregulated price structure, which will cause serious economic harm to consumers and gas companies alike. */ Indeed, the market

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*/ See, e.g., U.S. Department of Energy, Office of Policy Planning and Analysis, Division of Energy Regulation "Study of Alternatives to the Natural Gas Policy Act of 1978," DOE/PE-0031 (November 1981); Means, Robert C., "Preliminary Analysis of Natural Gas Market-Ordering Problem" (February 1981); Senate Committee on Energy and Natural Resources: Oversight Hearings on the Implementation of Title I of the Natural Gas Policy Act (November 5-6, 1981), Testimony of C.M. Butler (Chairman, FERC), Jack Elam (Chairman, Process Gas Consumers Group), Dr. Charles J. Cicchetti (Independent Consultant), Dr. Edward W. Erickson (Professor of Economics and Business, North Carolina State University), Jerome McGrath (Interstate Natural Gas Association of America), and Written Statement of the American Gas Association.

distortions arising under the NGPA are well described at pages 13-28 of the Commission's Statement of Policy, issued in Docket No. PL82-1-000, on February 4, 1982.

Regulated wellhead gas prices currently are generally far below levels expected to prevail in a functioning free market, while prices for gas in the narrow deregulated categories are far above rational free market levels. For example, while the FERC and the Department of Energy estimate that the average wellhead price of gas was $1.91 per Mcf in September, 1981 (the equivalent of $11 per barrel of crude oil), substantial gas volumes are priced below this level, and Section 107 gas was frequently selling for substantially above $9.00 per Mcf (nearly five times the average wellhead price of gas and the equivalent of crude oil costing over $50 per barrel). At the same time, most observers, including the Commission and the Department of Energy, have expressed the view that, in a truly free market at the wellhead, natural gas would cost approximately 70-80% of the refiners' acquisition cost of crude oil or the average retail price of residual oil less average gas transportation costs. In other words, the price for Section 107 gas far exceeds expected free market levels, while the price for most other regulated gas falls far below this level.

Moreover, the uneven distribution of the old gas cushion is also creating problems in the form of regional price and supply disparities. These disparities are, in effect, recreating a distinction between the interstate and intrastate markets which the NGPA was intended to eliminate.

The NGPA has within it the potential for even more substantial market disruptions in 1985. Most contracts for gas that will be deregulated in 1985 contain definite or indefinite price escalator clauses. As a result of these clauses, gas which is priced below market clearing levels today, including most Section 102 and 103 gas, will sharply increase in 1985 not merely up to, but far above, market clearing levels. Some contracts for such gas contain indefinite price escalators tied to unrealistic prices of other fuels, such as the retail price of No. 2 oil; others contain price escalators that begin with an unreasonably high (albeit definite) initial price and increase by formula from there. Most contain "most favored nation" clauses providing that the applicable price is no lower than the highest price paid under other contracts in the area. */

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*/ Pricing formulas used for Section 107 gas are also serving as models for other gas contracts, including sales of refinery

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When these categories are deregulated, the contract price will initially rise to prices comparable to those being paid for Section 107 gas.

These extreme price terms, combined with increasingly high take-or-pay clauses, will force gas prices far above market clearing levels, driving many industrial and large commercial users permanently from the gas system and causing severe rate increases to the remaining customers. Only after serious pipeline load losses cause widespread contract renegotiations (e.g., pursuant to market-out clauses, where they exist) and breaches of contracts will some semblance of order return to gas markets. Unfortunately, the cushion of permanently price-controlled gas is very unevenly distributed among pipelines, enabling some to pay more than others without losing markets. As a result, the renegotiation process will not proceed smoothly in 1985, since no producer will want to accept less than other pipelines are paying in the area. To make matters still worse, the uneven distribution of the cushion of price-controlled gas will tend to create widespread inequities, as some pipelines will have surpluses and possibly growing markets while others face shortages and load losses.

Consumers will be the major victims of the severe market disruptions expected in 1985, and gas companies will suffer as well. At that time, all consumers will experience sharply increased rates; some will suffer curtailments; and others will switch to cheaper alternative fuels, leaving the remaining customers to pick up larger shares of pipelines' fixed costs plus potentially large take-or-pay expenses. */ Gas distribution companies can expect large load losses and a hostile ratemaking environment. Industrial confidence in the gas industry may be irreparably damaged, and the loss of substantial industrial load will be permanent.

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gas. See, e.g., Further Notice of Application, Texas Eastern Transmission Corp., Docket No. CP82-76-000 (January 28, 1982). Commitments to high-priced supplemental supply projects, such as LNG imports, may also involve extreme above-market prices.

*/ The consulting firm of Jensen Associates, for example, has projected that industrial and utility demand will decline by 30% between 1984 and 1986. See Testimony of Edwin Hardy before the Subcommittee on Fossil and Synthetic Fuels of the House Committee on Energy and Natural Resources, June 1, 1981.

V. SPECIFIC PROPOSALS

A. Wellhead Ceiling Prices.

1. The Commission Should Adopt Incentive Prices With Conditions To Mitigate Market Distortions.

The Commission has authority under Section 107 of the NGPA to prescribe higher incentive prices for high cost gas "to the extent that such special price is necessary to provide reasonable incentives for the production of such high-cost natural gas." */

The Industrial Groups strongly support proposals that will effectively increase available natural gas supplies by inducing expanded exploration for new gas reserves. We recognize that certain gas costs significantly more to discover and produce in some areas than in others. Encouraging exploration for new supplies is particularly important in view of some observers' projections of renewed curtailments. **/ However, any such incentive price rules must be limited and conditioned in order to prevent the supply incentive proposals from compounding the NGPA's market ordering problems. Accordingly, the Commission should reexamine its existing incentive price rules and proposals in order to add the limitations described below. It should also consider whether exploration for other types of gas would benefit from properly conditioned incentive prices.

First, incentive prices should be set at levels needed to obtain the desired supply response, but in no event should the incentive price be allowed to exceed the Commission's best estimate of the market clearing price which would be expected to prevail for natural gas in a truly free market. Setting higher prices will induce uneconomic exploration and exacerbate the problem of achieving market order in 1985 since it will increase the number of contracts that must be negotiated down to market clearing levels.

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*/ The Commission has already established incentive prices for gas from tight sands, and it has proposed incentive prices for gas discovered in deep waters and for intermediate deep gas. Other fruitful possibilities may also exist.

**/ On June 1, 1981, Edwin Hardy of Jensen Associates told the House Committee on Energy and Natural Resources' Subcommittee on Fossil and Synthetic Fuels that widespread curtailments of industrial users are likely to begin in 1983, with curtailments reaching industrial process uses in 1984.

Second, as a quid pro quo for the higher incentive prices between now and 1985, the Commission should require that producers who elect to take advantage of the incentive prices forgo price escalators (whether definite or indefinite) which would automatically drive prices under the relevant contracts above levels expected to prevail in a free market. There would be no objection, however, to including open-ended price renegotiation clauses or indefinite pricing clauses linked to prices in new contracts for new supplies signed a reasonable time after January 1, 1985 (provided that any such clause also allow for de-escalation if market conditions significantly change).

Such an exchange -- higher prices today for forgoing the short-term economic rents of a price spike in 1985 -- should not be unattractive to producers who must, by now, be somewhat uncertain as to how long pipelines will honor contracts contributing to the price spike. The potential benefit to consumers and pipelines -- greater supplies in the near future at prices approximating true free market levels and relative price stability in 1985 -- should also be obvious.

2. The Commission Should Increase Old Gas Prices With Conditions That Will Benefit Consumers.

The Commission should explore the potential benefit to consumers of increasing ceilings on old gas prices now in exchange for conditions that will reduce the price impact of deregulation on consumers in 1985.

The artificially low price of old gas is a fundamental cause of the present market disorder and of the likely future disorders that will occur. To the extent that the price of old gas is increased, the market will be less likely to support artificially high prices for deregulated gas, and pipeline-by-pipeline and region-by-region disparities in gas prices and supplies will be reduced over the long term.

On the other hand, increasing the price of old gas could actually exacerbate the problems of some pipelines, particularly those with high gas acquisition costs, or those which committed to high prices for deregulated gas prior to the time an increase in old gas prices was anticipated. Thus, if a pipeline's gas acquisition costs now result in a retail gas rate at the burner-tip approaching the level of competing fuels, increasing old gas prices may push retail rates above competitive market prices, forcing the pipeline either (1) to accept load loss, or (2) to invoke market-out clauses (to the extent that it can) in high price gas contracts thus risking loss of gas to pipelines with lower gas acquisition costs. Consequently, any rule increasing old gas prices must be coupled with other measures, such as those described in Section B below, designed to ameliorate the market disorder now occurring and certain to worsen after 1984. Otherwise, increasing old gas prices could exacerbate market disorder now and in the future.

Sections 104, 106 and 109 of the NGPA authorize the Commission to increase ceiling prices on old gas if it finds that higher prices would be "just and reasonable" under the Natural Gas Act. The courts have afforded the Commission considerable discretion in establishing producer prices under the Natural Gas Act. */ Exercising this authority in the context of the NGPA may offer additional bases for the Commission to act. For example, if the Commission determines that the orderly transition to deregulation that was intended in Title I has been altered by unforeseen events (e.g., larger than expected oil price increases), it may be appropriate for the Commission to take steps under Sections 104, 106, and 109 to smooth the transition process. Although administrative action alone cannot undo the basic structure of gas prices mandated by Congress, the NGPA, on its face, permits the Commission to make adjustments in prices for some gas categories.

The Industrial Groups would not support administratively increasing the price of old gas unless it leads, directly or indirectly, to a tangible benefit for consumers. The proposal suggested here is one that would achieve such a benefit, by tying increases in old gas prices to conditions assuring less precipitous price increases and supply shifts after 1985. It is not simply a matter of trading higher prices later for higher prices now. The problems which may occur in 1985 and thereafter threaten substantial adverse impacts to the interests of consumers. If increasing old gas prices now can be conditioned in a way to reduce these impacts, the price increases might be justified under the Natural Gas Act and the NGPA.

One approach would be to permit a producer to receive higher ceiling prices on old gas in exchange for renegotiating the deregulation clauses (applicable to 1985 and thereafter) in existing contracts covering equivalent volumes of new gas. If the producer would agree to cap the price of the new gas after 1984 at a specified market clearing level (e.g., 70-80% of the weighted averager refiners' crude oil acquisition costs), he could receive now a higher price for old gas to be determined by the Commission. The Commission's "just and reasonable"

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*/ See Permian Basin Area Rate Cases, 390 U.S. 747, (1958); The Second National Area Rate Cases, 567 F.2d 1016 (D.C. Cir. 1978), cert. denied sub nom American Public Gas Association v. FERC, 435 US 907 (1978).

determination for such old gas could then be based, in part, on the recognition that a smoother transition to deregulation, with less rapid price increases after deregulation, can save consumers money in the long-run. Producers, on the other hand, would receive a present economic gain, in exchange for agreeing to forgo a later economic windfall. */

B. Pipeline Purchasing Practices.

1. The Commission Must Assure That Pipelines Have Unambiguous Economic Incentives to Minimize Gas Costs.

If the Commission adheres to its tentative narrow interpretation of "fraud, abuse or similar grounds," which virtually eliminates any review of deregulated gas costs, it must develop some alternative method to provide pipelines with other unambiguous economic incentive to keep deregulated gas costs within reasonable bounds while providing full service to their customers. The Commission has ample authority to devise an incentive scheme under the Natural Gas Act. **/

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*/ Of course, any such condition on old-gas ceilings would have to be coupled with a rule which states that it is an abuse for contracts signed after issuance of such a rule, or in anticipation of such a rule, to include terms that would lead to above-market prices. Without such a parallel rule, contract negotiations for future purchases of new gas would be directly linked to renegotiation of old contracts in regulated categories of gas, which, correctly, is illegal under the FERC's regulations. 18 C.F.R. §270.207. That is, so long as pipelines are prospectively placed on notice that it is an abuse for new contracts to contain terms that will drive prices above market clearing levels in 1985, then it might be just and reasonable for pipelines to be allowed to use potentially higher ceiling prices on permanently price-controlled gas as consideration for renegotiating acceptable terms in previously signed contracts for gas that will be deregulated on or before January 1, 1985.

**/ As discussed below, The Industrial Groups believe that the Commission has taken an unduly narrow view of its authority under NGPA Section 601(c)(2). However, even assuming the NGPA requires liberal passthrough of gas purchase costs, nothing in the NGPA evinces a broad intent to replace the Natural Gas Act's consumer protection objectives with an unquestioning, cost-plus ratemaking scheme. Two of the basic premises of utility law -- that no utility is guaranteed a fair return on investments, only an opportunity to earn one, and that utilities have a duty to exercise their managerial skill to provide adequate service at the lowest possible costs -- remain as valid today as before the NGPA was passed.

The FERC might consider adopting an "incentive rate of return" mechanism to provide the desired economic incentives. An "incentive rate of return" mechanism could allow the pipeline's return on equity to be adjusted upward or downward to reflect the prudency of its deregulated gas purchases and its ability to maintain full service. Under such a mechanism, a pipeline would achieve a higher than normal rate of return if it provided full service to its customers (i.e., no curtailments) and kept its average cost of deregulated gas below the level expected to prevail in a free market. On the other hand, the pipeline's rate of return would be reduced if it failed to fulfill its service obligation */ or paid deregulated gas prices which materially exceeded the level expected in a rationally functioning market.

The Commission might also consider providing similar incentives through the selection of gas sales volumes to be used in calculating unit rates, so that the full rate of return could be earned only by matching or exceeding a predetermined volume level. **/ Other types of incentives could theoretically be devised.

The Industrial Groups recommend, therefore, that the Commission solicit the views of pipelines, distributors, state commissions and other parties concerning these and other meaningful incentives that could be established for keeping down total gas acquisition costs.

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*/ Maintenance of adequate gas service to customers must remain the gas industry's primary duty, and a pipeline should not be permitted to reduce gas purchase costs by imposing curtailments. True force majeure situations due to events out of the pipeline's control and normal service interruptions consistent with contractual relations would not trigger reductions in a pipeline's rate of return.

**/ For example, if one could estimate the volume of sales that a pipeline would make if it paid realistic market prices for deregulated gas, then one could make the pipeline's ability to earn a normal return depend directly upon its success in purchasing gas at or below the desired level. Unfortunately, estimating demand under various pricing scenarios would be difficult to do, and such a device would provide little incentive to pipelines serving relatively inelastic markets. Nevertheless, in theory this might be an alternative to an incentive rate-of-return.

2. The Commission Should Promulgate A Rule Governing Pipeline Take-Or-Pay Costs.

High take-or-pay commitments constitute a major problem in pipelines' current contracting practices, which can be addressed using the Commission's continuing authority under the Natural Gas Act. As pipelines continue contracting to pay above-market prices for deregulated gas (either through definite or indefinite pricing provisions), they will face market losses. When those predictable losses occur, pipelines that have also committed to high take-or-pay contracts will face expenditures for volumes of gas paid for but not taken. In effect, the customers left on the system will be asked to pay both for gas volumes they use and for volumes they do not use. The Commission should make it clear now that such take-or-pay costs will not be forced upon consumers through increased rates.

While it may not be possible to define in advance precisely when take-or-pay expenditures are acceptable, the Commission can at least offer guidance through a "safe harbor" type of rule. If the rule is followed, a pipeline would be assured the ability to include take-or-pay costs in rate base. However, if a pipeline incurs take-or-pay expenses as a result of contracts outside the "safe harbor," it would have to prove specifically that such take-or-pay costs were prudently incurred and should be included in future rates. Obviously, in the event take-or-pay costs are incurred, gas purchase contracts to which this rule is applied must include contracts with the highest prices, so that pipelines do not attempt to evade the rule's function merely by incurring take-or-pay penalties on inexpensive gas while trying to flow through the expense of high cost supplies.

The Industrial Groups specifically recommend adoption of a rule establishing the presumption that take-or-pay expenditures will not be currently recovered or included in a pipeline's rate base unless the relevant gas purchase contracts provide: (a) that the purchaser's take-or-pay obligations decline as the prices paid for natural gas increase above a Commission approved level, or (b) that the buyer's take-or-pay commitment does not exceed a fixed percentage approved by the Commission (e.g., 75% of annual volumes tendered by the producer). */ Direct precedent

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*/ Under the first alternative, pipelines could be restricted in their ability to include take-or-pay expenditures in their rates unless such expenditures were incurred under contracts in which the take-or-pay obligations decline in direct propor-

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for the first approach exists in the Commission's orders in the Canadian pre-build gas import proceedings. */

The Commission has authority under the Natural Gas Act to adopt either proposal. Section 601(c) of the NGPA applies only to ceiling prices paid under the NGPA, not to take-or-pay obligations which commit pipelines to pay for volumes of gas when those volumes are not needed by the pipeline's customers. **/ Such terms are governed by the Natural Gas Act. ***/ Even if covered by Section 601(c), the Commission

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tion to price increases above a certain level approved in the Commission rule. For example, the Commission rule could limit take-or-pay expenditures so that 90% take-or-pay commitments are acceptable in contracts up to the highest regulated price (including incentive prices established by the Commission) but that, as the price goes above that level, the take-or-pay level must decline proportionately. The goal would be to protect consumers from bearing take-or-pay costs on high cost supplies when cheaper supplies are available or when market demand declines in response to rising prices.

*/ See Northwest Alaskan Pipeline Company, Docket Nos. C[illegible]123, et al., Order of April 28, 1980 (pages 55-64), Order of June 13, 1980 (pages 8-12), Order of June 20, 1980 (pages 2-10).

**/ As a general matter, Title I establishes ceiling prices; it does not regulate take-or-pay obligations. While Section 601(c) governs review of prices paid by pipelines for natural gas resold to their customers, nothing in Section 601 requires the Commission currently to pass through prepayments for supplies that will only be acquired and resold in the future (or possibly never) or to allow pipelines to earn a return on amounts expended in the form of such prepayments. That is, the NGPA's requirement of cost passthrough is clearly limited to costs for gas actually resold to a pipeline's customers. Beyond that, the issue of whether the pipeline committed to purchasing unnecessary volumes of gas is one of prudency. And, in view of the plainly foreseeable market decline resulting from above-market prices, it is clearly imprudent for pipelines to commit to contracts that they cannot fulfill.

***/ Take-or-pay expenses have never been passed through pipelines' purchased gas adjustment mechanisms but, instead, have been treated as rate base items with recovery of those costs at such future time as the gas is actually received and with a return earned on the costs in the interim.

has ample latitude under that section to define as "abusive" the excessive take-or-pay obligations outlined above. */

3. The Commission Should By Rule Define the Abusive Character of Certain Price Escalator Clauses.

The Commission should anticipate the price explosion expected in 1985 by using its NGPA Section 601(c)(2) authority now to define limits on the passthrough of gas costs under contracts containing definite or indefinite price escalator clauses.

One means of accomplishing this goal would be to establish a rule which states that, to the extent price escalator clauses drive individual contract prices above market clearing levels after January 1, 1985, the result will be deemed a presumptive "abuse" under Section 601 of the NGPA, and these amounts will be excluded from a pipeline's PGA. For these purposes, the market clearing level could be estimated by the Commission, presumably based on the price of competing fuels (e.g., 70-80% of the weighted average refiners crude oil acquisition cost).

Escalator clauses in contracts for gas subject to deregulation after 1984 are perhaps the most serious problem facing the gas industry. The gas affected includes gas qualified under NGPA Sections 102 and 103, as well as some gas under Sections 105, 106, and 107. Adopting the proposed rule now will put both pipelines and producers on notice as to the cost recovery pipelines will be allowed under such clauses beginning in 1985.

As another alternative, the Commission could define as an abuse the failure to include workable "market-out" clauses in all contracts for deregulated gas. So-called "market-out" contract clauses ostensibly enable a gas buyer to insist upon price renegotiation to prevent deregulated prices from causing it to lose resale gas markets that it would otherwise be able to serve. In theory, these clauses could provide the flexibility needed to mitigate the damaging price jumps anticipated in

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*/ Even if take-or-pay terms were governed by the "fraud, abuse or similar grounds" standard, the Commission could readily make a finding of "abuse" to the extent a pipeline committed itself to pay high deregulated prices (including prices under indefinite escalators) without preserving its flexibility to purchase cheaper supplies when available or to the extent it committed to purchasing volumes significantly in excess of its customer's requirements.

1985. Unfortunately, to the extent they exist, these clauses have been written in many different ways and their effectiveness is often doubtful. To the extent a model "market-out" clause could be suggested as a "safe harbor," pipelines might effectively be warned against the risks of omitting such a clause in their gas purchase contracts -- providing a valuable deterrent to 1985 market disruptions.

Either of these proposals would obviously require revision in the Commission's recently issued Statement of Policy concerning the meaning of Section 601(c). */ However, since that Statement is a "tentative" view and does not have precedential value, the Commission is free to address itself anew to the proposals made here.

Contrary to the Statement of Policy, The Industrial Groups believe that the Commission retains substantial authority under NGPA Section 601(c)(2) to restrict passthrough of gas costs. The Commission's tentative Statement of Policy on the meaning of "fraud, abuse or similar grounds" is based on an unduly narrow and strained construction of the Act. Rather than looking to tort law, the Commission should look to common usage of the "fraud, abuse ..." terminology, to the traditional duties that pipelines owe to their customers, and to the overall regulatory framework. At a minimum, The Industrial Groups believe, the NGPA preserved the FERC's authority to protect customers both from abuses of the wide discretion normally afforded to pipeline management in its efforts to provide full service at the lowest possible cost, and from distorted purchasing practices which seriously undercut the NGPA's effort to achieve a smooth transition to substantial deregulation. In a sense, the "fraud, abuse ..." standard is a safety valve to be used if pipelines fail to protect their customers or if partially deregulated markets run amok -- as they have here. **/

Under this broader, more reasonable interpretation of Section 601(c)(2), the "fraud, abuse or similar grounds" standard must at least be used to protect consumers from pipeline purchasing practices which foreseeably will cause serious harm to gas markets. Insofar as virtually all observers -- including the Commission and the gas industry's own trade associations -- now foresee those serious problems resulting from indefinite pricing clauses combined with high take-or-pay commitments, the Commission can and should take steps to prevent abusive purchasing practices from injuring customers. */

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*/ Statement of Policy, Fraud Standard in Section 601(c)(2) of the NGPA, Docket No. PL82-1-000 (February 4, 1982)

**/ The Industrial Groups anticipate filing a more extensive analysis of the "fraud, abuse or similar grounds" standard in Docket No. PL82-1-000.

4. The Commission Should Adopt a Presumption Concerning "Abusive" Contract Prices.

Prices paid by pipelines for deregulated gas have been challenged as unlawful under Section 601 of the NGPA in several pending pipeline PGA proceedings. However, the Commission need not await the outcome of these cases to address, prospectively, the more serious problems arising in gas markets. The fact that there is already a significant market order problem appears both from the very high deregulated prices that are currently being paid and from the inability of certain interstate and intrastate pipelines to compete for that gas. Steps are needed to prevent the situation from worsening, particularly as a result of bidding by pipelines which do not seriously need the Section 107 supplies.

Accordingly, pending the establishment of a full free market under substantial deregulation, the Commission should consider establishing a rebuttable presumption that it is an "abuse," under NGPA Section 601(c)(2), to pay any wellhead price above the level expected to occur in a functioning free market. If the evidence were to demonstrate that a pipeline has paid higher prices for gas, the pipeline would have the burden of showing that its actions were not abusive but rather served best the interests of its customers and the public. For purposes of this rebuttable presumption, the Commission would define a market clearing price, presumably based on the price of competing fuels.

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*/ Although indefinite escalator clauses and high take-or-pay obligations may seem reasonable in more stable economic times, they become unreasonable and potentially dangerous for pipelines and their customers when gas prices and markets are undergoing rapid and potentially massive changes, such as the gas industry faces now and after 1984. In view of the explosive character of these clauses in today's extreme circumstances, it is a patent abuse for pipelines to sign gas purchase contracts which commit them to buying large volumes of gas at prices that foreseeably exceed market clearing levels, and which cannot be honored without causing severe harm to resale customers. Moreover, the Commission would abuse its discretion if it fails to take steps to protect interstate gas consumers from these pricing practices.

Such a rule would recognize that pipeline agreements to pay higher than true market prices will undercut the transition to a functioning free market by creating severe economic disruption as a shrinking gas cushion and declining demand call for gas price reductions at the same time that contracts compel sharp price increases -- conflicting forces that will be particularly acute in 1985. Such a price limiting presumption would also have the beneficial effect of tending to reduce the gas purchasing disadvantages faced by pipelines which have small cushions of permanently price-controlled supplies. At the same time, it would allow individual pipelines to demonstrate special considerations justifying any higher prices actually paid. In addition, of course, such a presumption would greatly simplify and reduce the costs and uncertainties associated with most PGA proceedings.

C. The Commission Should Require the Public Filing of All New Gas Purchase Contracts.

To aid the Commission, Congress, and the public in assessing natural gas market conditions and pricing practices under the NGPA, the Commission should fully utilize its authority under Section 315 of the NGPA to gather, review, and make public all new contracts to purchase gas at the wellhead for eventual resale to the public. That is, the Commission should promulgate a rule requiring all first sale purchasers of natural gas for resale under new contracts and all successors to existing contracts or rollover contracts to purchase gas for resale to file such contracts with the Commission, together with any ancillary agreements or existing contracts. All contracts so filed should be available for public inspection. At least, meaningful summaries of the principal pricing and quantity terms in each contract (including market-out and take-or-pay clauses) should be made available to the public on a pipeline-by-pipeline basis.

By fully exercising its authority under Section 315(c), the Commission will greatly enhance its ability to monitor pricing developments and, where necessary, to develop new guidelines to protect the public interest from abusive and imprudent pipeline purchasing practices. In addition, making these contracts public would enhance public and Congressional awareness of the nature of new gas contracts and thereby increase the likelihood that rational and timely steps, including any appropriate amendments to the NGPA, will be taken to mitigate future price and supply disruptions. Furthermore, because pipelines have a monopoly position which leaves customers with little recourse against pipelines' unreasonable gas purchasing practices, it is important that customers at least be given sufficient information on pipeline purchasing practices to enable them to anticipate rate increases and consumer responses. Increased public and customer awareness will also exert pressure on pipelines to adopt balanced purchasing practices. Finally, by treating all pipeline purchasers equally none will be able to complain of having suffered any disadvantage.

VI. CONCLUSION

As before in its history (and that of the Federal Power Commission), the Commission is faced with a novel and serious problem affecting the natural gas market. Today, it has no choice but to take action promptly. The Industrial Groups believe that the proposals advanced here provide means for addressing the major problems in the gas market today and deserve serious consideration in public rulemaking proceedings as soon as practicable.

WHEREFORE, for the foregoing reasons, The Process Gas Consumers Group, The American Iron and Steel Institute, Associated Businesses Advocating Tariff Equity, The Brick People, *et al.*, and The Georgia Industrial Group respectfully petition the Commission to institute a rulemaking proceeding to establish rules designed to mitigate market distortions arising under the NGPA.

Respectfully submitted,

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March 1, 1982

Senator **Nickles**. Thank you very much, Mr. Elam. Senator East, I understand you have a couple of quick questions before you leave?

Senator **East**. I appreciate that, Mr. Chairman. I appreciate the Senators from Kentucky and Louisiana giving me just a moment to ask a question or two. I have to leave at twelve and greatly regret that I will have to move on, but I would like to welcome all the gentlemen of the panel, and I would particularly, since he is a constituent of mine, welcome Mr. Jack Elam, a very distinguished citizen of North Carolina, from Cone Mills, one of the great industries of our State, so we are very happy to have you here.

Mr. Elam, what I would like to inquire of you or anyone else that might wish to comment upon it, is to clarify my own thinking and make sure we understand where we are going in this area.

As you will recall, Mr. Elam, in North Carolina back in the 1970's we suffered a very severe problem because of a shortage of natural gas in North Carolina and the other States of the Union, but I come from a definitely consumer State. There is no question about it, and the question that Mr. Gooch has raised earlier, obviously it is of deep concern to our business development which has been at a good pace, as the Sun Belt generally has been. We want to continue to encourage quality business and industry to come in. We want to see that it has tools and the resources it needs to develop and grow.

My first question is—I will try to keep these brief—my first question is: That as you would see it, and the other gentlemen here, you represent obviously a consumer industry in a consuming State, do you feel that—one might quarrel over time and place and exact form and so forth—do you think the move in the direction of deregulation of natural gas as prudently and expeditiously as circumstances will warrant is the direction we ought to be going in?

Mr. **Elam**. Yes, sir, I do.

Senator **East**. In terms of accomplishing the end that Mr. Gooch has suggested, namely, to insure a plentiful supply of natural gas at a reasonable price for our existing industries, let along those that we are always encouraging to come in to North Carolina for our continued economic development, am I correct in assuming that is what we are saying or what you and the gentlemen here are saying?

Mr. **Elam**. You are correct. My company sells in a market that is probably one of the freest and most competitive in the country, indeed in the world. We are used to that environment, and our philosophy is that if we make a deal with somebody and it is not a good deal for him, it is probably not going to be a good deal for us either.

I am not here to be in apology for the producers. Some of them I don't even like very well, but we have done business on a self-help basis with producers and we think there ought to be something in it for them, and it ought to be in a free market.

Senator **East**. Would it be accurate as you see it to say that our problem in North Carolina at the mid-1970's where we had shortages and it was disruptive and hurtful to the public and private sector, that that would be substantially attributable, that shortage, to the fact that we have regulated and controlled gas to the point there wasn't the incentive to produce it, hence we were encouraging the consumption of it and hence we finally ran up against the realities of the world I guess of supply and demand? We weren't encouraging people to produce it, yet we were consuming it at an increasingly rapid rate because of the artificially low price, and those two lines finally converged and were economically disruptive, and frankly did cause severe economic pain in North Carolina?

What I want to make sure of as a legislator here from a consuming State is that I understand in your best business judgment and assessment, since you again are a prominent businessman from North Carolina, a consuming industry or consuming State—do you think that was a heavily contributing factor?

Mr. ELAM. I am convinced that it is, Senator. I am not an expert on the gas business, and I hope I never will be, but I never again want to make a telephone call telling two of our plants to shut down because we don't have any gas to supply them with.

Senator EAST. All right. Thank you. Let me ask you one other question here. Basically I have three, and one I will go through very quickly.

In the area of oil deregulation, obviously that has been successful of late in the country. We noticed an initial increase in the price of oil gas, and there was some concern about that, and understandably so. Then it began to move down as you got your margin adjustments, market adjustments.

Maybe this isn't a question you feel fully competent to answer, but I am just interested in it as a businessman in a consuming State as to what your response to it would be.

Would we anticipate initially with deregulation, particularly a fairly abrupt one, a modest or fairly dramatic increase in natural gas prices for the near term, but then again a leveling off for the long term? Would that be the kind of trend that we might anticipate do you think?

Mr. ELAM. Senator, we are a consumer, and I would hope that would be the case, and I think that is the case. The reason I think that is the case is because I am reminded of the price control days under the Nixon administration, and I saw the pressure building up in our own industry for increases in prices as those controls were maintained, and I feel that if they had been maintained much longer, we would have had an explosion of prices, and I think the same thing would have happened in oil had those price controls continued, and I think the same thing will happen in gas if we don't get the controls off.

If we get them off, I think there may be some short-term increase, and I don't know enough to say that that would be the case, but I am satisfied that the long-term results would be satisfactory.

Senator EAST. So the long-term results you are definitely very positive on and confident in? In the short term, you think that is perhaps a little difficult to say, but I gather you are saying you wouldn't expect, even assuming for purposes of discussion there were some initial increase in it, you wouldn't expect it to be of such a magnitude as to be disruptive to industry in our State?

Mr. ELAM. No, sir. Let me put it this way. My company can't do without gas. There is no technological equivalent, and we don't fear the long-range effects of decontrol of natural gas prices.

Senator EAST. Thank you, Mr. Elam. I thank the panel, and I would like to thank the Chairman and the other members of the committee for giving me this opportunity.

Senator NICKLES. I thank Senator East for your input with this committee today.

Mr. ELAM. Excuse me just one minute. Before Senator East leaves, I think I should mention that we realize there is a contract problem. In our written testimony we have proposed a solution to the gas contract problem.

Senator NICKLES. Thank you both very much. You mentioned that if you were to locate a plant you first and foremost would not go into an intrastate market? Was that correct?

Mr. GOOCH. Well, that is correct, but what I was saying, I was really discussing existing plants.

Senator NICKLES. If you are an existing petrochemical plant, and there are a lot of them in Louisiana and Texas, particularly the Gulf Coast, then you are in trouble to some degree?

Mr. GOOCH. Under the current situation, not only in Texas and Louisiana, and probably over half of the petrochemical capacity is in those two States, but there are petrochemical plants throughout the United States, but the answer to your question is yes. This isn't the time to try to get an intrastate gas supply because of the disadvantages of an intrastate pipeline.

Senator NICKLES. On that same line, Mr. Cohn, you are with Monsanto. You have plants in Louisiana and Texas and throughout other places in the country.

Dr. COHN. Yes, we do.

Senator NICKLES. Statements were made if we decontrol, if we don't decontrol, the price of gas is going to go up anyway. Gas is underpriced in the marketplace; but you are actually advocating before this Committee today that you want decontrol even though you realize that it may have some increase in your cost of your product, is that correct?

Dr. COHN. That is correct. We would expect, and we can't be certain, that there would be a short-term price increase. Long term, it will equilibrate at whatever the market says it is worth with all of the energy sources.

In those cases where it is not substitutable in our industry, we are concerned about the distortions, the non-competitive nature of some companies as a result of Government fiat if you will. Those companies that are located in Texas and Louisiana are using natural gas and some of the non-substitutable applications cannot compete in 1985 under the present law with companies manufacturing the same product that are located on, as Mr. Gooch will say, a deep cushion interstate pipeline, and it is this what we believe is relatively unfair competition because it is competition imposed by Government, not by the marketplace, that causes us concern.

Senator NICKLES. You said in the long run it is still going to be the market clearing price, but you wouldn't have these inequities where you have the low price gas subsidizing the deeper deregulated gas. As more gas becomes decontrolled you would have more of that cross-subsidy occurring where you would actually have your plants say in Texas or Louisiana that would really be at a competitive disadvantage with say other plants that happen to be located in one of the cushion areas where you have the millions of dollars of existing investments?

Let's just take the scenario that nothing was done. Mr. Gooch, you might want to reply. If we left the scenario the way it is today, and we had that, and the problem exacerbated itself between the intrastates and the interstates where possibly your only option would be a straight contract for that unregulated deep, do you see yourselves being able to continue? Or are you looking at a case where your feedstock particularly in the petrochemicals and in some others, that being such a large percentage of your raw materials, that it may mean that you would have to close the plant or move elsewhere?

Dr. Cohn. In some of the basic commodities that Monsanto produces, and we produce many that the rest of the chemical industry produces, our estimate of what the situation will be in 1985 under the current law would make some of our facilities non-competitive to the point where they would likely be shut down.

Senator Nickles. Mr. Lykins, your basic thrust of your statement was that you felt like you do compete, but regardless of whether you felt like you had an advantage or not an advantage, and I imagine some of the gas people would contest some of your statements concerning which would be the better fuel, but regardless of that, if I am recounting your statement correctly, felt like the marketplace would be able to set the prices of gas, oil, coal, any major resource?

Mr. Lykins. Yes, that is true. I personally feel that if gas is deregulated, there would be a slight increase, and I think if any of us is going to sit around and think that one fuel is going to be any cheaper than the other down the road, I think we may have a big surprise coming.

I personally feel that yes, that it would level itself out in a free market enterprise.

Senator Nickles. Thank you. Senator Johnston?

Senator Johnston. I thank you, Mr. Chairman. The AGA, Mr. Gooch, has said there will be no fly-up in 1985 because oil and new gas prices will already be at market clearing levels. As a matter of fact, Merrill Lynch comes to virtually the same conclusion, that there will only be about I think a 25-cent difference between market clearing prices and the actual NGPA prices in 1985.

What is your judgment on that?

Mr. Gooch. I thought I heard Mr. Lawrence say something different this morning. I heard him saying that there will be a fly-up. He attributes it to the contract problem.

Senator Johnston. He said a fly-up only because of the indefinite price contract provision.

Mr. Gooch. But a fly-up nevertheless, because as Mr. Lawrence analyzes the situation, that the Natural Gas Policy Act as is will not yield much of a fly-up. That is his analysis, but—nor the contract, if I understood that correctly. Now let me comment on that.

Let me point out first that there was already a fly-up built into the Natural Gas Policy Act, a fly-up built into it and engineered for in the legal sense. Incremental pricing was put in as a brake on the fly-up problem that was already designed into incremental pricing.

Chairman Dingell particularly spent a lot of time pointing that out to his colleagues on the other side. Now for those people you have to take as your base case what is the idea of holding the cushion on the interstate pipelines built into the NGPA and with the potential for fly-up already built into the NGPA, with the brake on it of incremental pricing and demand restrictions like the Fuel Use Act, you would have to say well, if the act is working as it was designed, there will be fly-up.

Now what makes the situation worse in terms of the fly-up is, one, the potential gap between the average price of oil and the average price of gas, no longer the $16 a barrel and $78 projection, and then on top of that, you have the cushion now, the cushion that I don't really think has come out the way it would have been projected because you really can't talk about averages. You have got to look at the cushion on each pipeline and see how much each pipeline has as a cushion, and that tells you how much more that individual pipeline can bid, outbid its competitor. There is the fly-up.

Senator JOHNSTON. Isn't it fair to say that if there is no fly-up, then you can deregulate without costing the consumer 1 penny?

Mr. GOOCH. That is exactly what I was going to say.

Senator JOHNSTON. If there is a fly-up, we must provide against it by some kind of change in the legislation.

Mr. GOOCH. Let me just address the first part. I would like to think obviously we would all prefer that there be no fly-up, and the problem with that is that the track record of people not bidding more than a market clearing level. That is the assumption you have to make, so to say there will be no fly-up, you have to say that pipeline companies will not bid more than the market clearing level, but we know that they do. We know that they are paying $10 an Mcf for gas right now, and we know that is above a market clearing level, so that we don't really have a track record where we can safely make the assumption well, nobody in their right mind will pay more than a market clearing level because they can average it in.

Senator JOHNSTON. Let me ask you what I think is a very simple, key question here. You represent a very large amount of the industrial load. Now what happens under NGPA to that industrial load? I am thinking huge amounts of industry between Baton Rouge and New Orleans in which billions and billions of dollars have been invested. What happens? Can you predict?

Mr. GOOCH. Two points—that industrial complex in the Texas and Louisiana area is just slightly over half of the petrochemicals. The rest of them are scattered throughout, so it is not just a Texas and Louisiana problem by a long shot.

Senator JOHNSTON. In those two States you have half of the petrochemicals?

Mr. GOOCH. About 60 percent, something like that.

Senator JOHNSTON. Those petrochemicals supply chemicals for what?

Mr. GOOCH. That is what I was going to say. According to Arthur D. Little, some 32 percent of the rest of the country's industrial base—rubber, textiles, plastics, pharmaceuticals—some 32 percent of the industrial economy is dependent upon primarily petrochemicals, the products and primary petrochemicals, over half of which come from that region, the region you are talking about, and the remainder scattered throughout the United States, and I wish I could tell you that they were all on deep cushion interstate pipelines, but they are not.

Senator JOHNSTON. What happens under NGPA? Do they have a business? Do they move?

Mr. GOOCH. The problem is this. If your pipeline supplier is forced to pay above the market clearing level just to get new supplies, and you can't afford it, and the other customers can't afford it, you have got relatively little choice, particularly if you have a feedstock or process use where you can't go to an alternate fuel. Then your choice is is there some way that I can avoid shutting down?

Well, one thing you try to do obviously is scramble to another pipeline supplier if there was one available, and there is not a pipeline supplier just immediately available throughout the country, but even if you find another pipeline supplier, if, for example, you would try to get the interstate pipeline to pick up your load, you have to go to Washington to get permission to do so, and a customer, an existing customer on the interstate pipeline can object and have standing to have a hearing of whether you can be taken on, so there is not even the hope if there happens to be another pipline in the neighborhood, you can't even count on the fact that you could switch suppliers, so the net result is a very bleak outlook.

Senator JOHNSTON. Considering the billions of dollars that are invested, is it a real option to move those plants?

Mr. GOOCH. No, sir. No, sir, it is not a realistic option.

Senator JOHNSTON. Do you have some kind of figure for, just to take that little strip between Baton Rouge and New Orleans, 120 miles, whatever it is on the river, can you tell me how many billions are invested there?

Mr. GOOCH. No, sir, I cannot.

Senator FORD. You wouldn't ask the question if you hadn't known.

Senator JOHNSTON. No, I don't know. What is the order of magnitude?

Mr. GOOCH. I cannot answer that. I will look at the Arthur D. Little study and see if I can ascertain that. I personally do not know the answer to that question.

Senator JOHNSTON. I hope my colleague from Kentucky will particularly take to heart what he is saying here, and that is there is too much invested to move it. You have got 32 percent of the Nation's industrial base dependent on it.

Senator FORD. Fifty.

Mr. GOOCH. I said 50 percent of the petrochemical capacity is there and 32 percent of the industrial base is dependent upon the products.

Senator Johnston, I appreciate very much your keen interest in the petrochemical base in Texas and Louisiana, and I don't want you to forget that, but I don't want you to also forget that almost half of it is not in Texas and Louisiana, too. We don't want to write that off either on some low cushion interstate pipeline that will have the same problems that an intrastate pipeline will have.

Senator **Johnston**. Thank you.

Senator **Nickles**. Senator Ford, I guess in the petrochemical industry that is the equivalent to you losing the whiskey business.

Senator **Ford**. Well, let me just say this. You have never known a time in the history of this country since they discovered it that somebody hasn't been making it, legal or illegal.

Mr. Gooch, where did you locate before NGPA?

Mr. **Gooch**. Where did I locate, sir?

Senator **Ford**. The petrochemical industry.

Mr. **Gooch**. Well, the petrochemical industry has been where it is today, sir.

Senator **Ford**. So you located there for a reason?

Mr. **Gooch**. Located throughout the United States.

Senator **Ford**. You located over 50 percent of the petrochemicals in Louisiana and Texas for a reason?

Mr. **Gooch**. Yes, sir.

Senator **Ford**. One is that it was not regulated in intrastate, it was regulated interstate, and so you went to where it was not regulated?

Mr. **Gooch**. I am not sure that I can personally testify to that, but I would say that is a reasonable inference.

Senator **Ford**. I have become reasonable today.

Mr. **Gooch**. May I add one other thing?

Senator **Ford**. I hate to let you add something when I've saying to these nice folks I am reasonable. Go ahead. I'm sorry.

Mr. **Gooch**. I mean no harm.

Senator **Ford**. Once you've dealt with Ralph Nader, you can't do any worse than that.

Mr. **Gooch**. I am more in fear that I will be the whippee and not the whipper, but I think that one of the motivating forces was to get near the raw material because the petrochemicals not only use gas for fuel, but they also need the product from the oil refineries, so that is another motivation. It is not just gas that takes them to that region.

Senator **Ford**. It is a reasonable assumption that petrochemicals are in Louisiana and Texas because at that time you were regulated on interstate, there was a fluctuation—you have gas in good weather and no gas in bad weather, and in intrastate you had, but you were paying more for it intrastate than interstate?

Mr. **Gooch**. Only 1 cent or 2 until recently.

Senator **Ford**. Two dollars and something; I heard all about that when we went through this bill. It was $2.08 and so forth, where on interstate it was much less than that.

Mr. **Gooch**. That was a relatively recent phenomenon, Senator. For a number of years, the intrastate price was within 1 cent or 2 of the interstate price, but I really am not trying to slow this down. I just want to make it clear that—I can't say how many plants were built before 1954, before the *Phillips* decision, for example, and I just don't have, know the answer to that, but I don't think there is any doubt that people moved a number of plants down to Texas to be near their raw material.

Senator **Ford**. Your admonishment of Senator Johnston to be very careful that 50 percent of the petrochemicals is outside those two States——

Mr. GOOCH. Less than 50.

Senator FORD. Forty-eight percent; you have got 52 percent in those two States. The rest of them have got 48.

Mr. GOOCH. I am not sure. I think it is nearer to 60/40, but close enough.

Senator FORD. Sixty-forty—either way, you're ahead.

Mr. GOOCH. Yes, sir.

Senator FORD. Mr. Rubin, you indicated that on the interstate pipelines that it would average everything out and you think we ought to go to Senator Johnston's bill and phase in and eliminate the controls on old gas. Am I correct in that statement?

Mr. RUBIN. I don't recall saying that it would average out, but because each of the individual pipelines has its own situation and some will get hurt——

Senator FORD. Why do you want to hurt anybody?

Mr. RUBIN. Well, I don't want to hurt anybody, but we want to avoid market distortions that would occur under the present situation.

Senator FORD. What if you are out here and you have acquired some gas at the old price and it is not going to be regulated and you are folding that in and you have got a product that everyone wants and you are selling it well under what the next pipeline can sell, and all of a sudden you devastate pipeline A and let pipeline B that has very little old gas, and pipeline A has a considerable amount, and all of a sudden, you devastate pipeline A because he has to increase all his prices and all are long-term contracts.

Isn't that consideration yours? Shouldn't you consider that?

Mr. RUBIN. If I were pipeline A, I certainly would, but I don't believe that deregulation would cause pipeline A's prices to go higher than pipeline B's.

Senator FORD. I am looking at your testimony that you gave here last year, and these are all the figures that you gave, and I am right concerned you don't remember it and didn't look at that before you came today.

Did you look at it?

Mr. RUBIN. Yes, sir. I don't recall having said that.

Senator FORD. There is $1.44 difference in my State in transmission lines, and that is a lot of difference, and if that $1.44—these are your figures now, not mine, the $1.44 difference, and so what you are saying is that January 1, 1985 they all go up and you are hurting that $1.44, aren't you?

Mr. RUBIN. Yes.

Senator FORD. A considerable amount, aren't you?

Mr. RUBIN. Probably.

Senator FORD. Mr. Lykins, did I understand you to say that fuel oil was deregulated, home heating oil was deregulated in a certain period? Did I understand you to say that?

Mr. LYKINS. Since 1976.

Senator FORD. What was the price of home heating oil in

Mr. LYKINS. I couldn't say exactly. I would say 30, 40 cents a gallon.

Senator FORD. What is home heating oil today?

Mr. LYKINS. In our area, right at $1.04.

Senator FORD. That has increased about four times?

Mr. Lykins. The same as the Clark bar.

Senator Ford. They just made the Clark bar smaller. It's obvious you don't eat Clark bars. So who sets the price of your heating oil?

Mr. Lykins. In our level, we do.

Senator Ford. Who sets the level before you get it?

Mr. Lykins. Your supplier.

Senator Ford. Who is your supplier?

Mr. Lykins. We have six—Ashland, Ky., people.

Senator Ford. It won't hurt you any.

Mr. Lykins. That's right.

Senator Ford. Who sets Ashland's prices? You know what I am getting to. Who sets Ashland's prices?

Mr. Lykins. Where they get the crude.

Senator Ford. OK. Where do they get their crude?

Mr. Lykins. All over the world right now.

Senator Ford. OPEC is what you are saying?

Mr. Lykins. From the way OPEC looks the last few days, they are not shipping much, but basically.

Senator Ford. Basically, all right; that's fine. Let me get over here. I don't want any of you to miss me.

Mr. Cohn, isn't the Government fiat—I'll be nice about it, though. Isn't it a Government fiat that you find that your petrochemicals and the people you have been discussing here today in Texas and Louisiana—you said by Government fiat. We find now that the interstate pipeline is better off than the intrastate. Wasn't it by Government fiat, by the price on interstate that that Government fiat put you in the intrastate market?

Dr. Cohn. Are you referring back to where the plants are located, Senator?

Senator Ford. Yes. You said a Government fiat, and that was the word.

Dr. Cohn. Well, the competitive nature of the industry is being set by the legislation and regulation in the gas industry, not the free marketplace.

Senator Ford. But the Government fiat at the time put you in the nonregulated area?

Dr. Cohn. That may have been, Senator. My perception, and again I am a little bit like Mr. Gooch, 1954 goes back a long way, but my perception is that the petrochemical industry grew in this Nation in that area because of proximity to its raw materials, proximity to excellent ports, and once it had started, the infrastructure, that built up within the petrochemical industry because so many of the products flow between these plants down there.

Senator Ford. I am just saying that the Government fiat that you referred to now, the Government fiat in the midfifties created the problem that you have today, that we have another Government fiat as you call it that has created the problems in the intrastate market. Am I correct in that?

Dr. Cohn. I believe that the present Government fiat which is the NGPA which is much more recent vintage is the one that has created the biggest market distortions. That's right.

Senator Ford. But the original problem that was created in the midfifties, that was a Government fiat if you want to refer to it that way?

Dr. COHN. That is when it started perhaps.

Senator FORD. All right. Let me ask Mr. Elam. I've got to hurry along. I asked the question earlier, and it seems to me—about Government contracts, and there was I think a statement made that price contracts that would not, that FERC wouldn't have any administrative ability over it, but in reading your proposal here that you submitted today, you are right into the middle of the contract and you have your lawyer with you, which substantiates the proposal you now have before FERC, the Commission should by rule define the abrasive character of certain price escalator clauses?

Mr. GRENIER. Senator, thank you. We do believe that the FERC has some limited authority to deal with the contract problem. It is not enough authority we think to really solve it. All it can do is hopefully create some palliative and take some of the sharp edges off it.

We have said in our rulemaking petition, and we have said here in our testimony, that we think the only true overall solution to the contracts problem is new legislation.

However, in the absence of new legislation, we are urging the FERC to use what powers it has both under the NGPA and under the Natural Gas Act to try to get rid of some of the market distortions being created by the NGPA.

Senator FORD. If I recall Mr. Lawrence's testimony, his only problem with the fly-up would be in the contracts, and I go back to—I believe that is what he said, that the fly-up would be in the contractual arena, and Mr. Gooch is agreeing with me.

Thank you, Mr. Chairman. I'm sorry to take so long, but it is such an interesting day.

Senator NICKLES. Thank you, Senator Ford, and thank you gentlemen. We would request that you would be responsive to our written questions.

On our third and final panel we have with us S. Mark Salvino with the U. S. Chamber of Commerce, John G. Buckley, Northeast Coalition for Energy Equity. We have Christopher Palmer with the National Audubon Society; William Cooper, United Distribution Cos.; Dr. Mark Cooper, the Consumer Energy Council of America. We have Robert Brandon, Citizen Labor Energy Coalition, and Gale Cincotta, National Peoples Action.

Mr. Salvino, are you ready to proceed?

Mr. SALVINO. Yes; I am.

STATEMENT OF S. MARK SALVINO, VICE PRESIDENT, TEXOMA PRODUCTION CO., ON BEHALF OF THE U.S. CHAMBER OF COMMERCE, ACCOMPANIED BY TALBOTT C. SMITH, DIRECTOR, ENERGY AND RESOURCES POLICY, U.S. CHAMBER OF COMMERCE

Mr. SALVINO. It is a pleasure to appear before you today to testify on behalf of the Chamber of Commerce of the United States.

My name is Mark Salvino, and I am a vice president of Texoma Production, and a member of the Chamber's Energy Committee.

I am accompanied today by Talbott Smith, chamber director for Energy and Resources Policy.

The current decontrol program is not in the Nation's long-term best interests, and we would like to go on record, as we have in the past, in favor of total decontrol.

The transition from a regulated to an unregulated market should take place sooner rather than later, and without total decontrol, the current problems under the Natural Gas Policy Act will worsen.

We propose that Congress rethink the issue of decontrol and adjust the program to reflect the changes in the gas market and world oil prices, and in the economy as a whole which have taken place since the NGPA was enacted.

We fear that without an early free and open debate on the issues an attempt will be made to recontrol, not decontrol, gas prices. This would send absolutely the wrong signal to American consumers about the need to conserve gas as well as to the world about this country's willingness to sensibly price its energy.

I will skip through as much of this as possible. We do have concern about the resolution that was recently introduced in the House and Senate to oppose accelerated decontrol by action of the Federal Energy Regulatory Commission. FERC is considering the possibility of increasing gas prices in certain categories through administrative rulemaking where the authority exists. Even though the resolutions are not binding, we view them with serious concern because of the impact they will have on the overall debate on decontrol which could come soon.

If Congress would consider legislation now to permit phased decontrol, FERC's actions would be unnecessary. In summary, the Chamber believes that there will be many long-term benefits associated with total natural gas decontrol. There is no doubt that gas prices will rise even under the present program. Our point is that gas price increases should be equitable and predictable.

The NGPA does not permit this, and those who oppose total decontrol will be well advised to study the flaws in the NGPA and plan to anticipate the bad results that come. It is quite apparent that the results of the NGPA will be more difficult to handle than a total and complete phased decontrol program.

[The prepared statement of Mr. Salvino follows:]

STATEMENT
on
THE BENEFITS OF COMPLETE NATURAL GAS DECONTROL
before the
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
for the
Chamber of Commerce of the United States
by
S. Mar. Salvino
March 23, 1982

INTRODUCTION

Mr. Chairman, I very much appreciate the opportunity to express the views of the Chamber of Commerce of the United States on the benefits of complete natural gas decontrol and I commend you for conducting these hearings. My name is Mark Salvino and I am Vice President of Texoma Production Company in Chicago, Illinois, and a member of the U.S. Chamber's Committee on Energy. I am accompanied today by Talbott C. Smith, Director, Energy and Resources Policy for the Chamber.

I am pleased to represent the more than 230,000 members of the Chamber, the largest business federation in the world. Its membership includes small and large businesses, trade associations, and state and local chambers of commerce. We represent every segment of business concerned with natural gas, from the wellhead to the burner tip.

The Chamber is convinced that total, not partial, decontrol of gas is necessary in order to achieve market-ordered energy pricing for all energy sources. We are disappointed that the Administration has chosen not to pursue corrections in the Natural Gas Policy Act of 1978 (NGPA) this year. The Act is flawed and will lead to serious problems in 1985, when about one-half of the nation's gas is decontrolled.

The energy crisis is far from over. Unless the United States implements policies to price energy at its market value, wasteful consumption and reduced domestic exploration and production will result.

The following points summarize our testimony:

- Gas prices should be determined by the market so that gas competes with other fuels. Gas now has a price advantage over oil and, in some instances, coal. Oil prices today are moderating because of reduced demand worldwide and domestic price decontrol.
- Senator Johnston's legislation, S. 2074, is one solution to adjust gas prices to reflect market value. The experience with the NGPA indicates that tying gas prices to oil prices produces mixed, if not bad, results. Senator Johnston's bill adjusts prices monthly based on 70 percent of the weighted average price per MMBTU for crude oil.
- The unnecessary policies of demand restraint, built into the present gas decontrol program, should be repealed. This includes incremental pricing and Fuel Use Act gas use restrictions. We support accelerated decontrol mechanisms and repeal of these other two policies.
- The gas market is distorted and confused. Efforts should proceed in Congress to solve the problems with the NGPA and to correct the problems we will outline.

Gas decontrol must come soon. We fear that, otherwise, well-meaning but misguided policymakers will want to correct the problems caused by price controls by adding new controls.

As others have no doubt indicated to you, the experience with oil decontrol shows clearly the response of the free market to consumer demand and supply. The President's decision to immediately decontrol domestic crude oil prices more than a year ago produced some interesting results. To quote the Washington Post of March 15:

> "Self-service gasoline prices have dropped nearly 10 cents a gallon in the last year. Home heating oil, more than $1.10 a gallon New York spot markets a year ago, was available last week in a commodity futures contract for about 74 cents. And the most recent declines in crude prices are still to be felt at the retail level. Gasoline use fell more than 11 percent between 1978 and 1981, and now is running nearly 5 percent below last year's level. The use of both light and heavy fuel oil -- more sensitive than gasoline to the state of the economy -- dropped 21 percent and 47 percent respectively over the three years. Net oil imports, which hit 8.6 million barrels a day in 1977, were down to 5.3 million barrels daily last year and 270,000 of those went into the Strategic Petroleum Reserve. In the four weeks ended March 5, net imports were only 3.8 million barrels a day."

Decontrol of domestic crude oil has helped produce the current supply of oil and has moderated prices. Oil decontrol has helped reduce imports which provides the United States greater national security and a more favorable balance of payments. In short, oil decontrol has proved to be a wise national energy policy and a similar program for gas could have similar long term results.

CHAMBER POLICY ON GAS DECONTROL

The Chamber has long favored a national program for phased, complete gas price decontrol. Because the NGPA does not provide for total decontrol, and because of the inequities imposed on industrial gas users with incremental pricing, the Chamber opposed its passage. In providing for only partial gas decontrol, the NGPA creates more problems than it solves.

In view of the NGPA's flaws, the Chamber favors decontrol of "new" gas prices at least by January 1, 1985, if not sooner. Congress should address the issue of "old" gas so that it is decontrolled as soon as possible and by a date certain. Continued production from old wells at controlled prices is uneconomical. Price controlled gas confuses and distorts purchasing decisions, encourages excess consumption and disrupts the gas market.

In addition, the Chamber favors elimination of demand restraints, such as incremental pricing and the Powerplant and Industrial Fuel Use Act (FUA) of 1978.

CURRENT PROBLEMS WITH THE NGPA

Many problems exist with the present gas decontrol program. Your Committee addressed some of them at hearings held in November, 1981. Studies conducted over the past year by the Department of Energy (DOE), the Cabinet Council on Natural Resources and the Environment, and Standard Oil of Indiana (Amoco) among others, point to three overall problems with the current situation.

First, because of the relationship set forth in the NGPA for oil price parity for gas in 1985, gas prices will rise abruptly (or "fly up") in 1985 to meet world oil equivalent prices.

Second, regional gas prices vary widely under the NGPA, because the price decontrol mechanism built into the NGPA leaves about half of the nation's gas under price controls indefinitely. This situation causes some users -- homeowners and industry alike -- to pay significantly higher prices than others. The gas prices are affected by the percentage of "old" price controlled gas a pipeline transports.

Third, because of the overly complex system of price decontrols mechanism for "new" gas built into the NGPA, inefficient allocation of fuels occur more than would be the case with complete decontrol.

There are other problems as well, but we will address each of these three conclusions first, then discuss the additional problems we find with the NGPA.

Possible "Fly-up" In 1985

The fatal flaw in the NGPA is the inaccurate prediction of 1985 crude oil price which became the target price for decontrolled "new" gas in 1985. This resulted in an underpriced decontrol pattern because oil prices have more than doubled since 1978. Today, even with moderating oil prices because of current supplies, there is a significant gap between the decontrolled price of "new" gas and the price of oil.

About 50 percent of the current gas supply will be removed from federal price control in 1985. While price increases can be expected for that gas, the magnitude is unknown. The average price paid for gas now is just below $2.00/MMBTU, but some gas is already deregulated -- so called "deep gas" -- which sells for about $10/MMBTU's. This disparity will continue as long as we have partial, rather than total, decontrol.

The NGPA encourages "deep drilling," which is fine, but discourages shallow drilling. However, the NGPA does not allow that the price of deep gas can be used as a reference price in other gas contracts. Producers of deep gas charge whatever the market allows. High prices paid for deep gas cannot be charged for any other gas in other contracts. Gas prices are driven up because of the presence of "deep" expensive gas with no reasonable assurances of greater additions to total reserves. By removing the bias toward more expensive "deep gas," there is a good chance that the nation can develop its total gas supplies, at whatever depth, in an economical fashion. Depending on supply and demand, there will be a mix of shallow and deep gas on the market and the market will determine its price, not some arbitrary determinent, such as well depth.

Even though it is difficult to predict, some studies have analyzed the possible effects of total decontrol on price. Some suggest a "fly-up" of prices to at least the $10/MMBTU level, exceeding the price of alternatives such as oil. Others think that average gas prices will go beyond what can be considered the long term market clearing level in relationship to other energy sources. Still others believe that the price of gas will rise to, but not exceed, the long term market clearing price for gas. The test for what constitutes a long term market clearing price varies among the studies.

Inequities Among Pipelines' Ultimate Costs

Beyond the uncertainty of what average prices under complete decontrol is the issue of how to revamp the existing pricing categories. The manner in which this is accomplished ultimately affects the final price to pipelines.

As an example, it is important to know that not all intra- and interstate pipelines carry the same percentage of "old," "new," "intermediate deep" or "deep" gas. The amount of high cost, and price-controlled, gas carried varies widely among pipelines. Pipelines with a large amount of price controlled "old" cheaper gas will be able to outbid pipelines for more expensive "new" gas. It is likely the price of "new" gas will be bid up. Many recent gas purchase contracts provided that gas prices automatically escalate to the highest price paid for gas in a well located nearby. These "escalator" clauses wreak havoc in the market as long as gas is controlled.

This Committee has heard testimony on the competitive problems some pipelines have under the present decontrol program. Additional testimony on this subject was provided to the Subcommittee on International Trade, Finance and Security Economics of the Joint Economic Committee at hearings held February 18, 1982. In particular, I commend to your attention testimony by R. Gordon Gooch, Managing Partner (Washington), Baker and Botts, reflecting his experience as General Counsel of the Federal Power Commission and as legal counsel to a variety of clients -- producers and users.

Mr. Gooch presented evidence regarding the potential loss of between 10 and 33 percent of the intrastate gas supply of some states, based on figures from Department of Energy studies aggregating data on gas consumption by region. Mr. Gooch cites his figures as a worse case scenario which would occur as a result of diversions to other pipelines with a cushion of cheap "old" gas. These pipelines could be interstate or intrastate. The result in either case is that producing regions will have supply problems.

Mr. Gooch stated in his February 18 testimony that:

> "While some in other regions may be indifferent to major disruptions of supply and price in the gas producing regions, the impact will be felt, severely, in other regions. As one example, consider that well over half of the primary production of petrochemicals takes place in Texas and Louisiana. These petrochemicals are not consumed in the region. They are shipped to the Carolinas where they appear as man-made fibers for the textile industry, to Ohio and Michigan where they appear as automobile tires and other essential components for the transportation industry, to New England and elsewhere as plastics; and, to shorten the geography, they appear nationwide as fertilizers, pesticides, medicines for animals and humans, as paints and coatings, as packaging for food and other products; and they are exported abroad, gaining one of the few bright spots in our balance of payments."

Inefficient Natural Resources Allocation Due to the NGPA

The many different prices paid today for gas cause economic distortions and provide for inefficient allocation of natural resources. The market should control the price paid for all energy resources. Continued price controls on gas perpetuate the myth that energy is cheap. This misguides potential purchasers and confuses long term business and consumer planning.

Regional pricing inequities abound with the NGPA. A recent report by the Energy Information Administration (EIA) concluded that complete decontrol would enhance gas supply and help mitigate regional pricing distortions. The President's Council of Economic Advisors reported on February 6, 1982, that average gas prices under the NGPA in 1985 are likely not to differ greatly from gas prices under compete decontrol. The recent reports support the conclusion that the market is the best allocator of resources.

Other Business Concerns

Incremental pricing, authorized in Title II of the NGPA, continues to be inequitable. Considering recent court decisions concerning the legislative veto by the House of Representatives of the second phase of incremental pricing, a cloud of uncertainty hangs over industry about future gas costs. Though this matter is likely to be settled by the courts, we would like to remind the Committee that industry is convinced that incremental pricing is an unfair program and that as a market ordering mechanism it has not worked well.

The Federal Energy Regulatory Commission (FERC), by tying the price of boiler fuel natural gas to the price of #6 fuel oil, has moderated the price impact on industry. We hope that FERC can leave incremental pricing along and that Congress will soon repeal the policy entirely.

The FUA should be repealed. The Act will be unnecessary after decontrol.

POSSIBLE LEGISLATIVE AND ADMINISTRATIVE SOLUTIONS

The Chamber commends those Members of Congress who have sponsored legislation to solve problems associated with the NGPA. In a February 22, 1982 letter to Representative Phil Gramm, the Chamber stated:

> "Both Senator Johnston's S. 2074, the Natural Gas Production and Market Adjustment Act, and your drafts, 075E and 075F, embody principles the Chamber believes will encourage greater conservation and production of natural gas. Only by accelerating the current natural gas decontrol schedule and repealing current laws constraining gas use will the nation fully realize the potential best uses of natural gas as well as other fuels."

In particular, Representatives Broyhill, Gramm, Collins, and Corcoran have continued to raise the public's level of awareness of the inherent problems of the NGPA. We are pleased that H.R. 5866 was introduced March 17, by Representative Gramm and others to accelerate the gas decontrol schedule. It is similar in many respects to Senator Johnston's proposal and we hope that this Committee will undertake a thorough study of the various proposals for complete gas decontrol.

Most of these proposals attempt to solve the oil price disparity in the NGPA. Senator Johnston's bill, as an example, attempts to reference decontrolled gas prices to a price equal to 70 percent of the weighted average oil price on an equivalent BTU basis. The Chamber generally supports the concepts and principles of such an approach as a realistic attempt to phase out price controls. Any phasing of decontrol must be tied to realistic oil prices.

On another front, the FERC is considering a rulemaking which could raise the price of so-called "intermediate deep gas" (gas produced at depths of from 10,000 to 15,000 feet) as well as for "old" gas (gas produced before 1977). FERC's action should proceed carefully and consider all available options for administratively adjusting gas prices to meet today's production costs.

Any action taken by FERC is sure to be challenged in court and might lead to extended litigation. We hope Congress can resolve the issues we have addressed which bear on FERC's actions and that Congress itself will take up the challenge of solving the problems soon.

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Senator **Nickles**. Thank you very much. Mr. Buckley?

Mr. **Buckley**. Mr. Chairman, I will just submit my statement for the record and make three or four comments orally.

Senator **Nickles**. Thank you.

STATEMENT OF JOHN G. BUCKLEY, COCHAIRMAN, NORTHEAST COALITION FOR ENERGY EQUITY

Mr. **Buckley**. I am here representing the coalition of some 4,000 independent oil marketers.

We compete with subsidized fuel, and it has not been easy in recent years, but beyond that, there are regional inequities flowing from NGPA increasingly, especially in the Northeast and the Northwest and the producing States, and I just kind of wonder why we are doing that.

I know there are a lot of consumer advocates on this panel who will be discussing consumer issues and talking about enormous increases in prices. I hope the panel takes a look at the data they are using to support that. My own compilation of their 1982 price figures is based on wellhead price of gas of something just under $46 a barrel, and we know that if you really were decontrolled, it would be more like $21 a barrel, so it spreads a lot of fear, but I think it is quite inaccurate.

Moreover, it is hard for me to see how consumers groups can be favorable to NGPA when what we are seeing in the Northeast is 30 to 40 percent annual increases in gas costs to consumers under NGPA. Why? Some of the lines that service our area have now got 10 percent deep gasoline, not a very deep cushion, and 10 percent deep gas. They just went up on Algonquin over $5 a barrel on their last 6 month adjustment so we see gas prices today in our area already more costly than residual fuel and starting to lose position to that fuel, whereas 1 year ago today heating oil was 60 cents a gallon more costly than natural gas. Today that is down to 5, 10 cents a gallon, and by the beginning of the next heating season will be in the competitive advantage over gas.

Now how are those gas consumers in our area benefiting from NGPA: They are not, nor are those in the Pacific Northwest, nor certainly are those in the producing States whose infrastructure does depend on available natural gas. Basically natural gas deregulation is going to end all the regional price inequities between oil and gas. It is going to at least ease the problem of gas shortages which are coming inevitably if this economy gets moving. It is going to create more supply and more conservation. It is going to decrease the price of oil. It is going to decrease the imports of oil and LNG and expensive pipeline gas from Canada and Mexico. It is going to reduce our vulnerability as a Nation, restore some of our foreign policy flexibility that we don't have because of our tie to imported oil.

I just think the benefits are so clear I can't understand how Senator Chafee could sponsor a resolution when we have a study from Harvard University that shows that the six New England States alone will benefit to the tune of $1 to $2 billion a year of inflow of money from natural gas deregulation and improvement in our competitive posture because we are on middle ground and the rest of the country is not.

Senator Chafee's resolution goes directly against the interests of the State and his constituency. Finally, I can't—I know you have a short period of time, but I can't let go without saying that I hope you move on the SPAA and try to override that veto. I think that was not a good move for the Government, and it is clearly related to this problem. If natural gas is deregulated, I wouldn't worry so much, but when you have oil prices and oil has to take it all, and it can't spread the natural gas because the market doesn't work there, then instead of having all Americans conserve and getting lower prices, only those who use oil conserve, and that is not a big enough cushion for me to feel comfortable without something on the books on a standby basis that the President has total discretion to use or not use, and I hope, too, think as a committee when this oil import fee keeps coming up again about the inequity of not deregulating natural gas and putting the $5 or $10 a barrel fee on imported oil. Again, you are hurting the Northeast where we use 70-75 percent oil, causing us an enormous competitive disadvantage.

We are paying in effect for a national security objective in a terribly disproportionate way through an import fee, and we have to oppose that unless or until you free natural gas, and then if you want to conserve, put an energy fee on, not just an oil import fee. I know that is related. It does tie into the reasons for natural gas deregulation.

Those are the main points that I wish to make apart from the statement that I submitted.

[The prepared statement of Mr. Buckley follows:]

STATEMENT
# of the
NORTHEAST COALITION FOR ENERGY EQUITY
on
NATURAL GAS POLICY

I. Introduction

My name is John G. Buckley. I am Co-Chairman of the Northeast Coalition for Energy Equity, and a Vice President and Director of Northeast Petroleum Corporation, an independent fuel oil marketer based in Boston.

The Northeast Coalition for Energy Equity is an ad hoc group formed to support efforts to end the discriminatory federal treatment between natural gas and home heating oil consumers. The Coalition represents approximately 4,000 home heating oil marketers serving over 8 million consumers in the nine states of the Northeast.[1] The members of the Coalition have a vital interest in natural gas decontrol and related pricing issues, because they sell home heating oil at free market prices, in direct competition with utilities that sell natural gas at lower, federally subsidized prices. Many members of the Coalition also sell residual fuel oil for industry and commercial use, also in competition with natural gas that remains under continuing federal price control.

Natural gas decontrol is an essential step on the road toward national energy equity, efficiency and self-sufficiency. However, most critically for us, natural gas decontrol is necessary to preserve the independent home heating oil sector and eliminate the discrimination against home heating oil consumers in current federal policy. In an ideal world, this discrimination would not exist, or would be ended by immediate decontrol of natural gas wellhead prices. However, we recognize that gross inequities cannot be terminated overnight. Therefore, the Northeast Coalition supports phased decontrol, leading to full decontrol of all gas prices by January 1, 1985. This policy will benefit the oil and gas consumers of the Northeast, and the nation. Accordingly, we strongly support S. 2074, the bill introduced by Senator J. Bennett Johnston.

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[1] Attachment A is a list of the principal associations that are members of the Coalition.

II. NGPA Discriminates Against Oil Consumers

Federal gas price regulation, as currently implemented under the Natural Gas Policy Act (NGPA), does not serve the interests of northeastern consumers. In fact, it seriously discriminates against northeastern consumers of both oil and gas. Historically, federal policy has held the wellhead price for most gas below the price of alternative fuels. But cheap gas has never been available in the Northeast (or Northwest) in any significant amounts. The Northeast uses other energy sources, including oil and more expensive gas supplies, to heat its homes and power its industry.

The Northeast's major energy source is oil. The price of oil, since its deregulation last year, has been set by the law of supply and demand. The law of supply and demand, of course, applies to all sources of fuel. Therefore, to the extent that federal regulation limits the supply of gas, or encourages demand for gas, it directly increases the price of oil by increasing demand for this substitute fuel. NGPA both discourages production and encourages consumption; it thereby forces the prices paid by oil consumers to artificially high levels, while certain selected gas consumers enjoy the benefits of price regulation.

Because of the Northeasts' dependence upon petroleum products, the NGPA increases the cost of living and doing business in the Northeast, and therefore costs the region jobs. However, the discrimination is not limited to the Northeast; it impacts oil consumers nationwide, increasing the price of all petroleum products, including gasoline, heating oil, aviation fuel, industrial fuel, SNG, and petrochemical feedstocks. Indeed, NGPA increases petroleum product costs so substantially nationwide that these increases effectively offset any downward effect on the price of gas. Therefore, NGPA may increase the overall energy bill of all Americans.2/

Even those northeastern consumers who use natural gas derive little benefit from NGPA price regulation. As the

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2/ In a study commissioned by the Northeast Coalition, Madison Consulting Group (MCG) of Madison, Wisconsin concluded: "Total energy expenditures of industrial, commerical and residential energy users (including natural gas expenditure increases and liquid fuel expenditure decreases) would be very similar with and without deregulation." This study will be provided to the Committee in full.

Committee is aware, NGPA channels gas price increases to purchasers with little or no access to "old" interstate gas. The pipelines serving the Northeast have little access to this cheap gas; moreover, they must pay substantial transportation costs, and rely for a large portion of their heating season supplies on imported LNG, synthetic natural gas, propane and, potentially, expensive Canadian imports. Thus, their customers are denied any benefits of NGPA regulation. Indeed, federal price regulation, by decreasing incentives for production and artificially increasing the price for deregulated supplies, forces pipelines with little old, interstate gas, including those serving the Northeast and Pacific Northwest, to pay more for pipeline supplies and to rely on expensive supplemental sources and gas imports. These adverse effects on Northeast oil and gas consumers are the inevitable result of a policy to provide a few regions with much cheaper gas supplies.3/

For example, residential gas prices in the Northeast averaged $5.99 per million Btu's in 1980, compared to a national average price of only $3.61 per million Btu's. Thus, as a result of NGPA regulation, northeastern residential consumers were paying 66 percent more than the national average price for natural gas. Similarly, the Northeast's industrial natural gas users paid from $3.14 to $4.09 per million Btu's in

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3/ See e.g., Washington Post, Sunday, December 13, 1981, A-1 (Attachment B).

1980 while industry nationally paid only $2.81 per million Btu's: a differential as high as 45 percent. These large differentials in gas prices, which impose a severe economic burden to the Northeast, are the direct result of federal controls on gas prices.

The large energy price advantage that federal regulation provides to certain regions and their consumers acts like a trade barrier to northeastern industry and a direct cost to northeastern oil and gas consumers. It prevents products made in the Northeast from competing fairly in other regions, and provides industry in other regions with a competitive advantage over northeastern plants. It is clealy bad national policy to guarantee lower fuel costs to some regions at the expense of others. In short, natural gas price regulation, by subsidizing some areas of the country, has a direct and serious adverse effect on the northeastern economy, on northeastern consumers and on oil consumers nationwide.

III. NGPA Will Create Shortages and Higher Prices

Some believe the natural gas regulatory morass should be "defused" with further regulatory solutions; we believe the only fair and effective solution is simple: total decontrol. The myriad of price inequities and market ordering problems caused by the NGPA illustrate the futility of a regulatory solution. Over the last thirty years, two entirely different market regulatory approaches have been attempted by the

Congress; both have failed. It is time Congress recognized the unfairness and inefficiency of allocating vastly different priced gas to different purchasers. If Congress does not recognize this soon, and act promptly, the inequities will get worse before they get better. Failure to act legislatively in 1982 may doom the effort to end by 1985 the inequities in the dual gas market, and between the gas and oil markets.

Failure to act will leave Congress with only two choices in 1983-84: first, let NGPA expire unamended and hope the distortions are manageable by the private sector; or second, extend NGPA regulation in order to attempt a smooth transition to decontrol at a later date. Each of these solutions would perpetuate the regional inequities created by NGPA; each will continue to impose the burdens of gas price controls on oil consumers. Neither solution is acceptable to the Northeast Coalition.

If NGPA is allowed to run its course without a major revision of old gas prices by the Federal Energy Regulatory Commission (FERC), the serious regional energy inequities that exist today will remain, and could grow worse, after 1984. Consumers in the Northeast and elsewhere will be forced to pay even higher prices so that gas consumers in other regions may be subsidized in their energy consumption.

Moreover, northeastern gas consumers would get no benefit from post-1984 controls on old interstate gas because their prices already will have reached oil price equivalent levels. Gas prices can not rise above these levels in a free market because consumers would then switch to oil. Gas consumers in the Pacific Northwest and, ironically, in the producing states, will share this predicament because of their limited access to old, interstate gas.

Some consumers in other regions or parts of regions will be luckier; gas consumers in Michigan, for example, on pipelines with "deep cushions" (i.e. large volumes) of old gas, may be major beneficiaries of the expiration or extension of NGPA. Certain pipelines which serve these areas may even be able to bid natural gas away from lines serving the Northeast, Northwest and similar regions. This market disordering could lead to massive curtailments in the less fortunate regions. And, of course, oil consumers in all states will pay the price for this gas subsidization.

The Committee may ask why the prospect of regional discrimination against consumers in the Northeast, Pacific Northwest, and Southwest, concerns oil marketers in the Northeast. And, indeed whether natural gas shortages in the Northeast would not benefit oil marketers in that region?

In the short run, and from a narrow perspective, gas shortages could benefit oil marketers. However, the cost of shortages will be borne by oil consumers, as the following example illustrates: When gas shortages occur, as they did in

1977, many gas consumers are forced to turn to the oil markets for an alternative fuel; this creates sudden added demand which forces prices upward for the home heating oil consumer and all others who use oil products. Bitter experience has demonstrated that gas shortages or any other crisis that destabilizes the energy markets ultimately adversely affects all fuels, including home heating oil.

In addition, such crises lead to irrational governmental responses. For example, Congress may well seek extension or modification of controls in 1984 or 1985 in a futile attempt to postpone shortages. Such a solution would be a serious blow to the home heating oil industry.

Oil marketers have been forced to compete with federally subsidized natural gas for too long; oil consumers have been discriminated against by federal policy for too long; the entire Northeast region has been at a competitive disadvantage for too long. Unfortunately, these inequities could continue well after 1985 if the NGPA transition to decontrol is so chaotic that Congress extends the decontrol schedule. Accordingly, the possibility of an extension of controls is one of the Northeast Coalition's principal concerns.

IV. Congress Must Act Now

Congress has an opportunity to smooth the transition to gas decontrol, but it must begin immediately. If Congress provides the mid-course correction to NGPA needed to assure a smooth transition, it can prevent the price shock and supply dislocations likely on January 1, 1985; and can eliminate any rationale for an extension of controls. But it must act now.

In addition, a comprehensive legislative correction now will directly benefit northeastern consumers in four significant ways:

First, the energy price disparity between the Northeast and other regions will be eliminated;

Second, the potential for gas shortages in the Northeast and elsewhere before 1985 will be significantly reduced, because of increased gas production and substantially more conservation of gas;

Third, the increased availability of natural gas will result in a decrease of oil and gas imports by 500,000 to 1,000,000 barrels per day. This will increase the downward pressures on the world price of oil, resulting in lower prices for all consumers of petroleum products; and

Fourth, the low income energy assistance program, which now provides only $1.8 billion nationally, can be expanded to accommodate all of the low income oil and gas consumers who need time to adjust to free market energy prices of the 1980's. This expansion could be funded from increased corporate taxes collected from natural gas producers.

If Congress refuses to grasp this opportunity to smooth the transition to decontrol, it must allow FERC to exercise its responsibility, pursuant to the law. FERC may be able to eliminate many of the inequities between regions and pipelines that now exist and that otherwise will exist on January 1, 1985. If FERC acts responsibly, it may be able to minimize the price and supply shocks that will otherwise occur in 1985. If FERC acts promptly, Congress may not be faced with a major legislative battle, in the midst of severe market problems and immediately before the 1984 elections, to extend NGPA controls. However, if Congress handcuffs FERC by resolution, rather than guides it by legislation, it is inviting chaos, shortages and a major political dilemma in the near future.

V. Program of the Northeast Coalition for Energy Equity.

Because of our concern that continued NGPA regulation will seriously injure our businesses and the region we serve, the Northeast Coalition has been active in the effort to phase out natural gas price controls by 1985.

The Coalition has engaged independent experts to explore a number of issues relating to natural gas price controls which may be of interest to this Committee.

First, the Coalition commissioned the Madison Consulting Group of Madison, Wisconsin (MCG), under the direction of Dr. Charles J. Cicchetti, to analyze and quantify the effects of gas price controls on gas and oil consumers nationwide. The results are revealing. MCG concludes that the price consumers pay for oil products is decreased following natural gas deregulation. Depending upon the assumptions made, total oil bills may decline more than total gas bills may increase. Regardless of the specific assumptions made, oil consumers' lower bills will offset most of any gas price increase.

Second, the Coalition asked an independent research group at the Kennedy School of Government at Harvard to investigate the regional impacts of gas price controls. The Harvard studies will show, we believe, that natural gas price controls make it harder for businesses in the Northeast which use oil or gas to compete with plants using gas in other regions. The studies may suggest that this is one of the reasons why wages in the Northeast have been falling relative to those in other regions. If energy costs are high, firms must seek offsetting savings in other areas, for example wages, in order to compete. Working people in the Northeast are thus paying doubly for gas price controls: They pay a higher price for oil to heat their homes and they receive lower wages so their employers may remain competitive.

The Harvard studies also will examine the regional fund flows - in and out of the region - which will occur after deregulation, using a methodology developed by the Federal Reserve Bank of Minneapolis. This analysis demonstrates that a large share of increased payments from deregulation either stay in the consuming regions as payments to distributing companies, or investment capital for new tools and equipment, or return to the consuming regions as payments to stock and bond holders, or government payments out of tax receipts or programs. We believe on this basis that the Harvard study will show that the Northeast would actually gain -- perhaps as much as $500 million to $1 billion per year -- from the fund flows resulting from natural gas deregulation.

Third, the Northeast Coalition has just released an independent study by residential conservation experts at Oak Ridge, Tennessee. It shows that conservation in oil heated homes is running 18 to 32 percent ahead of conservation in comparable gas heated homes. The study suggests that, if residential natural gas prices rise to an average of only 90 percent of heating oil prices, conservation will free up as much as 1 trillion cubic feet of natural gas per year. This gas, of course, would be available to replace oil in many industrial uses, and to reduce oil and gas imports by more than 500,000 barrels per day.

Fourth, another study soon to be released by the Coalition will underscore the environmental benefits of decontrolling natural gas. By encouraging conservation, decontrol will make natural gas available for many industrial uses, resulting in substantial gains in terms of clean air.

Fifth, the Coalition has commissioned Data Resources Inc., and the Madision Consulting Group to do macroeconomic analyses of the impacts of natural gas price decontrol. One of the significant results of these studies has been a series of estimates of the federal revenue potential of natural gas price decontrol, with or without a windfall profits tax. With such a tax, revenues over four years from decontrol could exceed $75 billion. Even without a new tax, increased revenues over this period might go as high as $40 billion.

Finally, members of the Northeast Coalition have long been associated with efforts to provide an adequate level of low income energy assistance to families for whom energy price increases have become a serious burden. We have, therefore, commissioned a major study by Eisenberg and Power of Arlington, Va. which concludes that a significant expansion of low income energy assistance is necessary to help the poor pay rising natural gas costs, regardless of any modification to NGPA.

Mr. Chairman, all of these studies should be of major interest to this Committee. Accordingly, we are submitting the completed ones for review by the members and staff and for inclusion in your record; and will submit the others when they are completed. We would welcome the Committee's active investigation of any of the conclusions, particularly our conclusion that gas regulation discriminates seriously against oil consumers throughout the nation, and against all consumers in the Northeast.

Attachment A

DESCRIPTION OF MEMBERS OF NORTHEAST COALITION FOR ENERGY EQUITY

New England Fuel Institute

The association of independent fuel oil marketers in the six state New England region.

Empire State Petroleum Association -

The association of independent home heating oil marketers and gasoline jobbers in New York state.

Pennsylvania Petroleum Association -

The association of independent home heating oil marketers in Pennsylvania.

Fuel Merchants Association of New Jersey -

The association of independent home heating oil marketers in New Jersey.

Independent Fuel Terminal Operators Association -

The association of independent firms which operate deepwater fuel terminals on the East Coast, from Maine to Florida.

Coal Oil Producers Association -

An association of firms engaged in the development and commercialization of coal oil mixtures to replace industrial and utility fuel oil.

Attachment B

The Washington Post
Sunday, December 13, 1981

Heating Bills Rise as Firms Buy Costly Gas

By Stephen J. Lynton
Washington Post Staff Writer

The two pipelines that supply natural gas to the Washington area are buying more than half a billion dollars' worth of decontrolled gas at prices three times higher than their average costs and passing the increase on to homeowners and others.

The controversial purchases — the first major impact of complete deregulation of gas prices on the area — will increase homeowners' bills by more than 5 percent during this winter's heating season, according to data supplied by the pipelines. For a typical homeowner, the decontrolled gas will add more than $40 to yearly $750 gas costs.

At the same time, Columbia Gas Transmission Corp., the Washington area's main supplier, has such a large gas surplus that it is trying to sell its excess gas at lower prices than it is paying for decontrolled gas.

These moves have triggered protests by the Maryland People's Counsel, the Baltimore Gas & Electric Co., a consortium of large corporations that use gas including Koppers Co. and W.R. Grace & Co., the utilities commissions of New York and North Carolina, and such industry critics as Sen. Howard M. Metzenbaum (D-Ohio), an outspoken opponent of gas decontrol.

Accusing the pipelines of fraudulent and abusive practices, their opponents have asked the Federal Energy Regulatory Commission to prohibit the passing on of allegedly excessive gas prices and to order refunds. Protesters contend that the pipelines failed to engage in competitive bargaining over gas prices and that they artificially manipulated their sales and purchases to increase profits.

Moreover, since there is no U.S. shortage of natural gas today, critics say the pipelines easily could buy sufficient supplies at moderate prices. As evidence, they cite Columbia's failure to purchase low-cost gas that was available last summer from its regular Appalachian suppliers, as well as the company's efforts to sell off its current surplus.

"Columbia appears to be oblivious to the realities of the marketplace," Stanley W. Balis, a Washington lawyer, charged in a protest filed for Charlottesville and Richmond, which operate municipal gas systems. And, he added, Columbia's customers are "subsidizing" the company "to the tune of $5 to $6" per thousand cubic feet of gas. The Maryland People's Counsel, a state consumer agency, asserted in a separate petition that Columbia is seeking to bolster its profits and "exploit its customers."

The pipelines call these allegations "innuendo" and insist their purchases make economic sense by assuring future gas supplies for consumers. Washington Gas Light Co., which has 555,000 customers in the Washington area, buys 85 percent of its gas from Columbia. The other 15 percent comes from Transcontinental Gas Pipe Line Corp..

Pipeline spokesmen point out that most of the profits from high-priced sales of deregulated gas go to producers, such as Amoco, Exxon, Gulf and Superior. The pipeline companies usually do not profit from such sales, but act as conduits or middlemen for getting gas from producers to buyers. Their revenues come chiefly from transportation fees, which are not tied to the cost of the gas they buy. Gas costs are passed on to their customers.

But pipeline profits figure in the controversy. Columbia and Transco both have financial interests in the production of high-cost, deregulated gas, and both pipelines buy some decontrolled gas from themselves at high prices. Washington Gas Light also has an interest in deregulated gas production, but does not purchase gas from itself.

The controversy provides an indication of the impact national gas decontrol may have in the Washington area. Home heating bills have climbed steeply in recent years because of inflation and congressional legislation. Gas company officials have estimated that across-the-board decontrol could nearly double homeowners' monthly heating bills, although some energy specialists say that the increase would be smaller.

So far, only a few sources of natural gas have been fully deregulated — chiefly gas produced from very deep wells, drilled three miles underground. This is the deregulated gas that is entering the Washington area in increasing amounts.

In removing price restrictions on such gas, Congress sought to spur gas production from high-risk ventures.

Under the 1978 Natural Gas Policy Act, the cost of price-regulated gas is scheduled to rise steadily until 1985, when price ceilings would be lifted on about 60 percent of the nation's gas. Cost limits would remain on other older gas wells. The Reagan administration has given extensive consideration to accelerating decontrol, a politically touchy proposition, but it has stopped short of announcing such a move.

Decontrolled gas, from deep wells and other deregulated sources, now accounts for about 3 percent of the nation's supplies, according to industry estimates.

Columbia and Transco are among several pipelines buying expensive, decontrolled gas, setting off increasing legal challenges.

During the current six-month period, Columbia expects to purchase nearly $255 million worth of deregulated gas at prices averaging almost $8 per thousand cubic feet, including $3 million for gas it is buying from itself. Transco estimates that it will purchase nearly $306 million worth of decontrolled gas at an average price of about $7 per thousand cubic feet, including $65 million of gas from a wholly owned Transco subsidiary.

These prices compare with costs averaging between $2 and $3 per thousand cubic feet for the two companies' purchases of price-controlled gas.

Meanwhile, Columbia has taken several steps to reduce its gas surplus. For 44 days last summer it halted some purchases of low-priced gas from producers in the Appalachian region. It is seeking federal approval to sell billions of cubic feet of gas to buyers that are not among its regular customers, including gas distributors based in Delaware, Pennsylvania, Texas and Louisiana.

Opponents contend that the pipelines agree to pay exorbitant prices for deregulated gas because they are sheltered from the normal economic pressures of a competitive marketplace. The pipelines can simply pass the higher prices to their customers through automatic pass-through provisions, their critics say.

In addition, the pipelines' opponents charge that the companies are profiting at consumers' expense by selling high-priced gas to themselves and artificially creating a market for their corporate affiliates' expensive gas. Columbia's attempts to sell off current supplies of lower-priced gas are intended to create such a market, critics assert.

The pipelines dispute these charges, contending that they are seeking to guarantee long-term gas supplies for consumers by buying the cheapest gas available in a competitive marketplace.

"There is no way that we can meet our long-term needs without buying the deep, deregulated gas," says H. William Chaddock, Columbia's vice president for communications. "We have to tie down our supplies today."

Despite Columbia's current surplus, pipeline officials contend that the company will face a shortage of gas starting in 1985 unless they obtain long-term contracts for additional supplies now.

Columbia officials attribute their current surplus — 166 billion cubic feet on top of the 1.1 trillion the company expects its customers to buy — to the economic recession, conservation and other factors. Although critics have urged Columbia to use this surplus to help meet customers' future gas needs, pipeline officials say this would be too costly.

The company would have to borrow money at today's high interest rates to pay for gas not needed for several years, Chaddock explained. It is less costly, he said, to sell off surplus gas now and purchase more gas later, when it is needed.

Columbia officials also defend on economic grounds the pipeline's practice of purchasing high-priced, decontrolled gas from itself on economic grounds. They maintain that the company's own gas production helps assure future supplies for its customers. The company, they say, is entitled to recover its costs and a reasonable profit from these ventures. And, they assert, Columbia charges its customers less for its own high-cost gas than it is currently paying other producers.

Transco officials give similar arguments for buying deregulated gas.

"You do the best you can to keep the price down. You buy what's available," says Transco spokeswoman Barbara Johnson. "Our supplies are running out."

Washington Gas Light Co. has not yet announced whether it will protest the pipelines' high-priced gas purchases in the FERC proceedings, although officials say the company is studying the issue.

Senator NICKLES. Thank you very much. Mr. Palmer?

STATEMENT OF CHRISTOPHER N. PALMER, DIRECTOR, ENERGY AND ENVIRONMENT, NATIONAL AUDUBON SOCIETY

Mr. PALMER. Mr. Chairman, my name is Christopher Palmer. I am director of Energy and Environment in the National Capital Office of the National Audubon Society. We have half a million members throughout the country, and we appreciate this opportunity to testify on natural gas deregulation. I would like my whole testimony to be put in the record if I may.

We favor accelerating decontrol of all gas with a windfall profits tax on old gas. The revenues should be specifically targeted to protect the poor.

We do not support decontrol without such a tax. Even with a tax, accelerated decontrol should not be immediate; 1985 is more appropriate than 1982. Consumers need time to make protective investments.

Such a policy would stop the subsidy of natural gas consumption, assist low-income families to withstand higher energy prices, overcome the price fly-up, strengthen the economy by making it more efficient, probably reduce oil imports, provide significant environmental benefits, reduce pressure to develop synthetic fuels, encourage energy efficiency and solar energy investments, end an extraordinarily complex regulatory system, and help contain and control energy prices in the long run.

Accelerated decontrol of natural gas prices is a crucial step to achieving energy efficiency, but it is not the only step. The Government must also take steps in development, technical assistance and information programs, and especially stop subsidizing energy supply so much, particularly wasteful projects like the Clinch River Breeder Reactor.

It is absolutely vital that accelerated decontrol of natural gas be accompanied by programs to prevent suffering. Decontrol threatens the welfare and security of millions of people unless a windfall profits tax is enacted specifically targeted for the poor. A windfall profits tax should be applied to old gas and the revenue used to benefit low-income people through compensation and upgrading the efficiency of their homes. Common decency demands such a tax, but energy-pricing policy and welfare policy should be kept separate. Middle- and high-income people should not be shielded from real energy prices. The suffering from high energy prices is real and must be addressed. The poor should receive enough assistance to maintain their real income as energy price increases erode it, and new assistance has to take into account the uncompensated erosion which has already taken place since the early 1970's.

We are gravely concerned that a windfall profits tax might be added in order to win decontrol only to find later, as in the case of oil, that the poor are betrayed as the tax is weakened and withdrawn. This would mean becoming energy efficient on the backs of the poor and would be unconscionable.

Moreover, decontrol should not be immediate and should be phased in over 2, 3 years. We believe now is a good time to correct the flows in the NGPA. Gas is not in short supply. The oil market is currently slack, and the U.S. economy is likely to experience stable oil prices in the short run. If Congress does not act now, it is highly likely that price controls will be reimposed into the 1990's in order to avoid a price spike in 1985.

Natural gas decontrol would accelerate the introduction of more efficient equipment such as storm windows, cogeneration, pulse-combustion furnaces, fuel cells, and industrial heat pumps. Thus the opportunity to control energy prices grows considerably as energy prices are decontrolled.

Decontrol would also rid us of rolled-in pricing and thus remove the economic crutches from synfuels and many other polluting energy projects. In other words, deregulation would remove the opportunity to subsidize expensive gas supplements by rolling such gas in with artificially cheap gas. Synfuels cannot compete economically with decontrolled gas, and the new supplies of gas brought about by higher prices would underscore the absurdity of subsidizing this new industry with scarce Federal dollars, an industry which can only produce a substitute for natural gas at a price which is far in excess of the price of decontrolled gas.

The National Audubon Society urges this committee to support accelerated decontrol of both new and old gas with a windfall profits tax on old gas, the revenues of which would be specifically targeted to protect the poor.

Thank you.

[The prepared statement of Mr. Palmer follows:]

TESTIMONY

ON

NATURAL GAS DEREGULATION

BY

CHRISTOPHER N. PALMER
DIRECTOR OF ENERGY AND ENVIRONMENT

Mr. Chairman, my name is Christopher Palmer. I am Director of Energy and Environment in the National Capital Office of the National Audubon Society. We appreciate this opportunity to testify on natural gas deregulation.

The National Audubon Society is a non-profit environmental organization with nearly half a million members. Energy policy is one of our top priorities because of its enormous impact on the environment. Last year we developed the Audubon Energy Plan[1] which concludes that a combination of energy conservation and solar power would cost far less, promote a healthier economy, do more to strengthen national security, and do less harm to the environment than would an all-out effort to produce more oil and other conventional energy sources such as nuclear power. (Copies of the Technical Report are available from my office.)

Natural gas pricing is extremely complex. On balance, we favor accelerating decontrol of all gas with a windfall profits tax on old gas. The revenues should be specifically targeted to protect the poor. We do not support decontrol without such a tax. Even with the tax, accelerated decontrol should not be immediate. 1985 is more appropriate than 1982: consumers need time to make protective investments. Such a policy would:

- stop the subsidy of natural gas consumption,
- assist low-income families to withstand higher energy prices,

- overcome the 1985 price fly-up and other problems created by the 1978 Natural Gas Policy Act (NGPA),
- strengthen the economy by making it more efficient,
- probably reduce oil imports,
- provide significant environmental benefits,
- reduce pressure to develop synthetic fuels,
- encourage energy efficiency and solar energy investments,
- end an extraordinarily complex regulatory system, and
- help contain and control energy prices in the long run.

NATURAL GAS

Natural gas is by far the most benign of the hydrocarbon fuels.[2] It is clean, safe, abundant, versatile and home grown. It is also a lot cheaper -- even when decontrolled -- than gas from Alaska, from coal, or from liquified natural gas (LNG) imports.

Natural gas plays a critical role in U.S. energy markets, providing 27 percent of the energy consumed in the U.S. Gas is used in about 55 percent of all residential and commercial establishments, and provides about 40 percent of the energy consumed by U.S. industry and agriculture. Indeed, gas provides two and one-half times as much end use energy to consumers as electricity.

It is an important fuel, and one that has significant advantages over oil, coal and electricity. Federal policies which actively discourage its production and use should be abandoned.

PROBLEMS WITH THE ADMINISTRATION'S ENERGY POLICY

It will be apparent to this Committee that there are similarities -- except for the windfall profits tax -- between our position on natural gas pricing, and that of the Administration. However I want to make it clear that we strongly object to the Administration's energy policy overall.

A key thrust of the Audubon Energy Plan is that conservation investments should be given a chance to compete fairly against supply investments. The Administration, despite the lip service it gives to the free market, currently provides subsidies to supply technologies which are at least nine times larger than those for conservation.[3]

The National Audubon Society supports a market-oriented energy policy because this leads to the most efficient allocation of scarce investment capital. Technologies such as nuclear, synthetic fuels, conservation and solar should compete for investment funds in the marketplace, without competition being distorted and skewed by subsidies and price controls. When there are problems which the free-play of the market is unable to handle, such as lack of consumer information, environmental damage, discriminatory lack of access to capital, national security threats from excess oil imports, suffering of low-income people, or institutional bias against life-cycle costs, then the government must step in aggressively to correct such problems. This may require information programs, technical assistance, research and development, or federal regulation. Such intervention strengthens the free market against its own intrinsic weaknesses. Thus uncontrolled prices and desubsidization are necessary -- but not sufficient -- conditions for an energy efficient economy.

For example, the multifamily and rental housing sector is fairly impervious to market forces primarily because of the disjunction between tenants (who generally pay the fuel bills and therefore get the message to conserve) and landlords (who own the buildings and therefore must make the conservation investments).[4] By ignoring the problem of tenants and landlords, the Administration is ignoring one-third of the residential energy market place.

The Administration's energy policy is radically different from Audubon's. Rather than letting the free market decide which energy technologies will attract capital, President Reagan is massively subsidizing nuclear power in a vain attempt to make the plutonium breeder reactor the cornerstone of this nation's energy policy. This is inefficient and dangerous. At the same time, he has eliminated almost all federal solar and conservation efforts[5] while continuing subsidies to synfuels. The President's energy policy will lead to the development of costly and uneconomic energy sources, unnecessarily high energy demand, aggravated inflation, waste of capital, fewer jobs, and increased environmental abuse, including increased risk from the greenhouse effect, acid rain, and nuclear weapons proliferation.

There has been an avalanche of in-depth studies over the last few years showing that the only way to have sustainable and significant economic growth is through reducing the vast energy waste in our economy.[6] Except for decontrol, the President seems to be doing all he can to perpetuate this waste and oppose increased energy productivity.

POOR PEOPLE AND HIGH ENERGY PRICES

Price signals are the most basic stimuli for increased energy productivity. Audubon recognizes and respects the power of prices. Hirst and others[7] estimate that the energy price increases of the 1970's saved 10 quads in 1980.

But the use of price to bring about economic efficiency has a major impact on poor people, and the Reagan Administration's concern for poor people is totally inadequate. While we agree with the President that it is not good public policy to try to help the poor by keeping energy prices artificially low for everyone, it is unconscionable that the poor should be neglected as energy prices rise. Gas decontrol will impose severe burdens on the most vulnerable segments of the population. In fact, the impact of decontrol will fall disproportionately on the poor.[8]

This country has a profound moral duty to see that the essential energy needs of low and fixed income people are met through a comprehensive social welfare policy. A free market in energy which gives poor people accurate price signals but does not compensate them for their loss of income, or facilitate their access to capital so they can respond with cost-effective energy efficiency investments, is fundamentally wrong. The people who benefit from low income energy assistance programs, for example, are the elderly, the disabled, and the working poor trying to avoid welfare. Helping them is a national responsibility and a moral imperative. It may even be a political imperative.

The average low-income household now spends well over 20 percent of its income on home energy needs. The figure is significantly higher in cold northern states where, in winter months, fuel bills will often exceed household income. 60 percent of the poor heat their homes with natural gas, so natural gas is a large low-income heating source. The elderly, with their fixed incomes and susceptibility to the cold, are particularly threatened by rising energy costs. Estimates of deaths caused annually by hypothermia -- below normal body temperature -- range well into the thousands.[9]

So the decision to deregulate natural gas prices must not be taken lightly, especially in view of the fact that the government programs offering the greatest long-term help to the poor -- the weatherization and the Solar and Conservation Bank programs -- are being eliminated by the Administration. In addition, the President is proposing a 30 percent reduction in the low-income fuel assistance program.

WINDFALL PROFITS TAX

The National Audubon Society believes that a windfall profits tax should be imposed on old gas as it becomes deregulated, and that this revenue should be dedicated to weatherizing homes of the poor to reduce permanently their fuel bills. Although we would usually like to see the proceeds of such a tax going into the general revenue fund rather than a dedicated trust fund, we believe that a dedicated trust fund may be justified in this case. Otherwise, the windfall profits tax might be used to balance the budget, while the suffering of the poor is forgotten.

In this regard, it is useful to bear in mind the sorry history of the windfall profits tax on oil. In 1979, the Crude Oil Windfall Profits Tax was promoted as a means of assisting the poor to meet their fuel bills and to capture some of the producer windfalls for the public. The tax has failed to live up to its promise. The revenue expectations were reduced substantially during Congressional consideration; and after the tax was enacted, revenues were further reduced last summer by $12 billion over five years.

Those groups -- like Audubon -- who recommend natural gas decontrol with a windfall profits tax to help the poor have a profound obligation to ask themselves if they aren't being had. After all, a bargain was struck on oil but not kept. We therefore have an understandable mistrust of those lawmakers who want realistic prices for gas and give us cavalier assurances that the poor will be cared for. The chances are they won't be unless natural gas decontrol is accompanied by a windfall profits tax on old gas with the revenues dedicated to helping the poor. Without such a tax, not only will the poor suffer unbearably, but the transfer of wealth from consumers to producers will be enormous and unjustified.

Natural gas decontrol will undoubtedly produce windfalls for producers. They are operating in a market dominated by the pricing policies of OPEC and therefore will be receiving much higher prices for old gas which produced a healthy profit for them at much lower prices. Decontrol with a windfall profits tax would mean consumers would receive accurate price signals while producers would share their windfall with the poor.

Despite President Reagan's July 26, 1981 letter to Representative Glenn English pledging to veto such a tax, we think such a tax can and should be enacted. We don't think it will make a significant reduction in the flow of old gas, and it would undoubtedly make a massive difference to the suffering of the poor.

REPLACEMENT COST PRICING

It will be useful at this point, Mr. Chairman, to step back and examine the basic case for decontrol. I will not address here the accumulating evidence that gas price controls do not appear to be any more successful in reducing prices to end users than were crude oil price controls.[10] I want instead to reiterate some basic principles which sometimes get forgotten in these types of debates.

A basic economic principle is that the prices consumers pay for any commodity should reflect its true value or replacement cost. There is no justification for shielding consumers from OPEC prices. The prevailing world price is the real cost to the economy for additional energy use. Every extra barrel of oil or Mcf of gas consumed in the U.S. means more imported oil at the OPEC price. There is no way world energy prices can be avoided, even with price controls. Price controls simply shift the cost elsewhere.

Price controls on gas represent a serious obstacle to conservation investments. Consumers are insulated from the full impact of costly new fuel sources because the cost of fuel from such sources is "rolled in" with the cost of fuel from less expensive older sources, so that the price of fuel rises only slowly toward replacement cost. Thus the consumer is not motivated to make some investments that are economically justified from the point of view of the nation.

Natural gas price controls mean that every day consumers are making investment decisions on the basis of erroneous assumptions about the replacement cost of natural gas. These investments will be in place for years and years, and constantly exert a drag on the economy, condemning it to inefficiency and high operating costs when expensive gas alternatives take over. High energy costs cannot be avoided, but they can be contained by letting prices rise to reflect them. And containing costs -- bringing them under control -- is the key to managing our energy problems.[11]

It is becoming increasingly clear[12] that controlling natural gas prices has not protected the poor or curbed inflation. Indeed, price controls have encouraged excessive consumption, slowed exploration and investment, and reduced the market penetration of valuable energy efficient technologies. Ross and Williams[13] have pointed out that energy and price allocation programs have evolved to the point where there is now an astonishing degree of involvement of the federal bureaucracy in the marketing and management decisions of individual firms. In addition, artifically low natural gas prices have locked this country into an even higher cost energy future. A question worth pondering is: How did we ever get ourselves involved so deeply in price controls in the first place?

HISTORY OF NATURAL GAS PRICING

Since 1938, interstate -- across state lines -- transportation of natural gas has been regulated under the Natural Gas Act of 1938. Wellhead prices, however, were not regulated until the U.S. Supreme Court decision in Phillips Petroleum Co. v. Wisconsin in 1954. As a result of that decision, the Federal Power Commission (FPC) -- now the Federal Energy Regulatory Commission -- extended regulations to wellhead prices of gas sold into interstate commerce. Intrastate gas -- gas produced and sold within one state -- was not controlled.

The result of the 1954 Phillips decision was the creation of a "two market" system for pricing domestic gas. Regulation held interstate prices for new gas below unregulated intrastate prices, and consequently gas shortages occurred in the interstate market. Low prices also stimulated interstate demand, which could not be met by interstate supply. This shortage problem, together with the bitterly cold winter of 1976-77, led Congress to pass the Natural Gas Policy Act (NGPA) in 1978.

The NGPA brought intrastate gas under federal regulation for the first time and imposed absurdly complex price controls on gas production. Under the Act, wellhead prices for certain categories of gas ("new" gas) may be decontrolled permanently in 1985 or, later, in 1987. But other categories ("old" gas) remain price controlled until produced and used. As a result, 40 to 50 percent of domestic gas will remain controlled in 1985, and about 20 percent will remain controlled in 1990.[14]

NGPA's price structure included escalation rates designed to adjust wellhead prices up to market-clearing levels by 1985 and thus to produce a smooth transition to decontrol. Unfortunately, these were based on 1978 oil prices ($15 per barrel) and, as you know Mr. Chairman, oil prices have since more than doubled to $34 per barrel.

Title II of the NGPA involved "incremental pricing." Under these provisions, high "incremental prices" are charged to large industrial boiler users of interstate gas in an attempt to insulate other customers (primarily residential) from wellhead price increases. By focusing high prices on gas users presumed to be the most price responsive, the policy attempted to protect residential gas users from high prices.

Congress passed the NGPA in an atmosphere of real and perceived gas shortages. The then Secretary of Energy James Schlesinger had spoken authoritatively of natural gas as a finite and fast disappearing resource. So it was understandable that Congress would try to regulate gas demand in other ways too. It did this with the Powerplant and Industrial Fuel Use Act (FUA). FUA restricted the use of natural gas by industry and electric utilities on the basis that burning gas under boilers was not a good use of a vanishing fuel. Since 1978 when the NGPA was passed, the change in the perception of gas availability has been such that the Omnibus Budget Reconciliation Act of 1981 removed certain restrictions on electric gas use contained in FUA. The National Audubon Society favors the removal of all restrictions on gas use contained in both FUA and the NGPA.

PROBLEMS WITH THE NGPA

There are several problems with the NGPA. First, the NGPA is unlikely to achieve a smooth transition to decontrol. Oil prices have more than doubled since 1978, and so a sharp rise in price is likely to occur. DOE[15] estimates that between 1984 and 1985, average wellhead prices will rise by 70 percent, while average residential prices will rise by 36 percent. The Energy Information Administration[16] estimates that in 1985 the national average wellhead price will increase by at least 50 percent. The American Gas Association, which favors maintaining the NGPA, believes there will be no price spike. This issue, and the influence of indefinite price escalator clauses, are discussed more later.

Second, the NGPA is likely to cause market instability. Different markets and pipelines have uneven endowments of cheap, price-controlled gas. For example, some pipelines in the interstate market are expected to have a substantially larger endowment of price-controlled gas after 1985 than are the intrastate market, and other interstate lines. This could cause large shifts of decontrolled gas between markets and pipelines as interstate pipelines with deep cushions bid up the price of deregulated gas until the average price at retail clears the market. In other words, the lesser ability of intrastate pipelines and some interstate lines to "cushion" the effects of high-priced decontrolled gas with cheaper old gas will make it especially difficult for these pipelines to compete for gas upon decontrol. This could generate political pressure for recontrol or for a government allocation program, similar to the now defunct "entitlements" program for oil which was so painfully unsuccessful.

Third, the price of deregulated gas will likely "fly up" above long-run levels in order to clear the market because of average rolled-in pricing. The so-called "price cushion" is unlikely to be captured by consumers, and the NGPA will not deliver the hoped-for price benefits expected from continued price controls on old gas. Partial decontrol -- as under the NGPA -- means that the benefits of price-controlled gas will be captured by producers through high deregulated gas prices. Today's prices for already deregulated gas (Section 107) support this view. Prices for deep gas range as high as $10 per Mcf -- way above long-run market-clearing levels.

Perhaps the most important problem with the NGPA is that the sharp price rises expected in 1985 may push the Congress into extending controls -- despite the fact that residential gas heat will still likely be cheaper in most regions than oil or electricity. So the debate about natural gas pricing is not really between accelerating decontrol versus keeping the NGPA. The stakes are much higher. The debate is really between accelerating decontrol versus extending controls into the 1990's. DOE[17] has concluded that extending price controls to 1995 would:

- cost the nation $31 billion by 1995 in economic efficiency compared to decontrol in 1985, and

- decrease U.S. energy security through larger volumes of oil imports and heightened vulnerability to oil supply disruptions. The impact of natural gas decontrol on oil imports is discussed more later.

Mr. Chairman, it may be useful now to summarize the reasons why the National Audubon Society supports accelerating natural gas decontrol.

SECURITY, EFFICIENCY AND ENVIRONMENTAL ADVANTAGES OF DECONTROL

Many of the advantages of accelerated decontrol have already been mentioned.

Oil imports would probably be reduced, assuming that clauses in existing gas contracts -- discussed more later -- do not push the price of gas so high that it becomes uncompetitive with residual fuel oil. If that unlikely event did happen, gas decontrol would probably lead to an increase in oil imports as industry and electric utilities switch away from gas to oil.

But if natural gas remains competitive with oil products -- which we think will happen -- then those consumers in the residential and commercial sectors currently using gas would conserve gas rather than fuel switch away from gas because it would still be cheaper than oil or electricity. This "conserved gas" would then become available for industry. The industrial and electric utility sectors would fuel switch away from oil to gas not only because gas would remain price competitive with residual fuel oil but because, with higher gas prices, industry can be assured of reliable supplies from both new production and "conserved gas." Thus, in the industrial sector, demand for gas would increase and imported oil would be backed out.

Although the impact of gas decontrol on oil imports is somewhat uncertain, our judgment is that oil imports would probably be reduced. Reducing imports would encourage the continued stability of world oil prices because of reduced U.S. demand pressure on the world oil market. This would have tremendous benefits for oil-poor third world countries as well as for ourselves. It would place downward pressure on consumer oil prices.

Excessive oil imports are still the greatest single threat to our economy and national security. Since the Arab oil embargo of 1973, the U.S. has become more, rather than less dependent on Middle East oil. In 1973, when we imported over six million barrels per day, about 18 percent of our oil imports came from the Middle East. By contrast, we now import slightly less oil -- about 5.6 million barrels a day -- but the portion of our imports coming from the Middle East has doubled. According to DOE, extending natural gas price controls to 1995 might increase oil imports by almost half a million barrels per day on average from 1982 to 1995.[18]

Accelerated decontrol is also likely to yield substantial economic gains. Some of these have already been discussed. For example, the NGPA decreases economic efficiency in at least three ways:

- low regulated prices provide erroneous price signals to users, thus distorting conservation and conversion decisions;
- users who do not have access to gas supplies (because of FUA restrictions, curtailments, or hookup moratoria) must use more costly alternative fuels such as imported oil and eventually synfuels, nuclear and coal; and
- the NGPA pricing scheme prevents the nation from producing the least-cost mix of energy supplies because of underproduction of price-controlled gas and overproduction of higher cost deregulated gas.

Some aspects of the economic inefficiencies of natural gas controls have become almost comically insane. For example, price controls on gas produce gas shortages; so the country pushes forward with a massive program to subsidize synthetic fuels, much of which will produce synthetic gas from coal. As a result, President Reagan, despite his preference for free-markets, recently awarded a $2.02 billion loan guarantee to the Great Plains coal gasification project in North Dakota. It will produce gas at a price far exceeding the price of decontrolled natural gas.

Another advantage of natural gas decontrol that we have not yet discussed is the environmental benefit. A soon-to-be published report by Chandler[19] points out that natural gas price controls detrimentally affect the environment by wasting gas which would otherwise be available to replace more polluting fuels. In addition, benign energy supply systems -- for example, solar energy and conservation -- cannot compete in the portion of the market (55 percent of residences, 40 percent of industry) supplied by artificially priced natural gas. Not even storm windows are cost-effective for gas consumers in many parts of the country at today's natural gas prices.

Chandler estimates that environmental benefits will come from the fact that the demand for oil will be reduced by more than 600,000 barrels per day as a result of decontrol. "Conservation gas" -- that is, gas made available through conservation -- could provide a large environmental benefit by making possible the use of gas in industrial cogeneration (of electricity and process heat) as well as in the continued use of gas in utility electric generation. This would eliminate the need to replace gas with coal as a fuel for electric generation in densely populated areas. Moreover, improved natural gas supply, by diminishing oil demand and oil price increases could further reduce the political impetus for a federally subsidized synthetic fuels industry.

Mr. Chairman, before I complete my testimony, I want to address the question of the expected rise in gas prices under decontrol, because this is central to the debate.

GAS PRICES UNDER DECONTROL

Some analysts believe that the wellhead price of deregulated gas should be approximately equal, on a Btu basis, to the wellhead price of deregulated crude oil. But the proper wellhead price is where gas demand and supply (both from increased production and conservation) are in balance -- the "market-clearing price."

This means that the price of gas will not rise as high as the equivalent price of OPEC oil.

Natural gas cannot compete with oil as a transportation fuel;[20] gas must compete in the buildings and industry markets with electricity and coal as well as oil. Thus its market price will be a function of prices for all three energy forms. In studying this, Sant[21] concludes that "it is highly unlikely that gas will ever be priced to consumers at the burner tip equivalent of oil."

The key sector is industry rather than buildings because it is much more price responsive. The wellhead price of gas would therefore equal the delivered price of competing fuels in the industrial market (delivered high-sulfur No. 6 fuel oil -- residual fuel oil) minus gas transportation, distribution and other post-wellhead costs.

It is bordering on the inconceivable that interstate pipelines would lose such a major segment of their market by letting the average delivered cost of gas become uncompetitive with residual fuel oil prices. Average wholesale prices for one percent sulfur residual oil in the first half of 1981 were approximately $32 per barrel or $5.10 per MMBtu, but prices have been falling steadily for a year and are expected to continue to do so. (On February 8, 1982, 1% residual was selling for between $28.15 and $28.50 on the spot market.) The retail mark-up on residual fuel oil is typically about $0.40 per MMBtu. Assuming that crude and product prices rise no faster than inflation between now and 1985, and using $32 residual as our benchmark, the market value of delivered natural gas to large industrial users will therefore be about $5.50 per MMBtu.

To calculate the wellhead market value of gas in 1985, transportation costs are subtracted from its delivered value. For large industrial users, the cost of moving gas from the wellhead to the point of use is about $1.00 per MMBtu. Thus the margin wellhead value of natural gas in 1985 will be about $4.50 per MMBtu or $28 per barrel.[22] Schroeder in reference 22 estimates that wellhead prices will average about $3.20 per MMBtu in 1984. $4.50 per MMBtu compared to $3.20 per MMBtu is a price rise the economy could reasonably be expected to manage, assuming the poor are given adequate help. If the price turns out to be $3.75 or $4.00 per MMBtu, the argument is so much stronger.

There is a complication, however. While a fly-up of acceptable proportions might occur due solely to market factors, a much more serious fly-up might occur because of so-called "indefinite price escalator" clauses in the contracts between pipelines and producers. Such clauses require gas prices to escalate immediately upon decontrol to prices well in excess of free market levels, thus forcing gas onto pipelines which is too expensive to sell.

CONTRACT PROVISION PROBLEMS

An indefinite price escalator clause can be broadly defined as a gas contract provision which (1) contains a "most favored nation" provision tying the wellhead price of natural gas to the highest price levels paid to other producers in the same region or field; or (2) contains a fuel-indexed clause tying the price level to oil or some oil product. Once the clause begins to operate, the price level cannot be predicted in advance nor controlled by the purchaser. Hence the name "indefinite."

Fuel-indexed price escalators, which, according to the American Gas Association,[23] appear in about 10 percent of all interstate contracts, will prevent marketplace equilibrium from developing because the automatic price boosts do not stop when a market clearing price is reached. Instead, the fuel-indexed escalator clauses will, upon decontrol, force many wellhead prices far above the market clearing level. Many transactions would be tied to the energy equivalent price level of crude oil, No. 2 fuel oil landed in New York Harbor, or various percentages -- in some cases exceeding 100 percent -- of these indicators.

Although these fuel-indexed contracts are a problem in themselves, of even greater concern is the prospect that the fuel-indexed price escalators will "trigger" the contracts containing most-favored nation clauses -- clauses which, according to the American Gas Association,[24] appear in 56 percent of all interstate contracts, and in nearly all post-April 1977 contracts. In addition, these contracts also contain "take-or-pay" provisions requiring pipelines to pay for the gas even if it cannot be sold. (More and more gas contracts now have "market out" clauses which allow pipelines to reject gas volumes they cannot sell.)

If the wellhead price of all the gas under most favored nation clauses should rise to meet the level of fuel-indexed contract prices, end-user demand for gas would drop precipitously, large markets would dry up, and the industry's fixed costs would be spread over a small pool of users who would consequently be hit by even more severe gas price rises.

Schroeder[25] has calculated that the contract problem could cause average wellhead prices to rise instantly by $2.10 per MMBtu upon decontrol, whereas a pure market response would be both smaller (in the range of $1.35 per MMBtu) and more gradual. Furthermore, the contract problem may become increasingly serious over time, causing wellhead gas prices to continue rising at the same time that market demand is falling, due to fuel switching among large price-sensitive users.

Mr. Chairman, I do not pretend to fully understand why pipelines have gotten themselves committed to contracts that threaten to take natural gas prices to unmarketable levels upon decontrol, but the contract problem is a potentially explosive issue which must be defused. The best way to do this would be for pipelines and producers to renegotiate their contracts. Producers may have an incentive to do this if they think, as is likely, that courts would not uphold such contracts given the radical change of circumstances since the contract was negotiated. In addition, why would producers want to bankrupt their only customers? If renegotiation does not occur voluntarily, then legislation to accelerate decontrol could possibly require renegotiation of such contracts; or give both pipelines and producers incentives to renegotiate;[26] or even conceivably statutorily modify the price escalator terms in existing contracts.

CONCLUSION

Few public policy issues are as complex as natural gas pricing. Accelerated decontrol of natural gas prices is a crucial step to achieving energy efficiency but it is not the only step. The government must also undertake research and development, technical assistance and information programs, and stop subsidizing energy supply so much, particularly wasteful projects like the Clinch River Breeder Reactor.

It is absolutely vital that accelerated decontrol of natural gas be accompanied by programs to prevent suffering. Decontrol threatens the welfare and security of millions of low-income people unless a windfall profits tax is enacted specifically targeted for the poor. A windfall profits tax should be applied to old gas, and the revenue used to benefit low-income people through compensation and upgrading the efficiency of their homes. Common decency demands such a tax.

But energy pricing policy and welfare policy should be kept separate. Middle and high income people should not be shielded from real energy prices. It is essential that this country catch up with its European allies and stop controlling energy prices. Food and clothing -- also necessities -- are not reduced in price for everyone in order to protect the poor. But the suffering from high energy prices is real and must be addressed. The poor should receive enough assistance to maintain their real income as energy price increases erode it. And new assistance has to take into account the uncompensated erosion which has already taken place since the early 70's.

We are gravely concerned that a windfall profits tax might be added in order to win decontrol, only to find later -- as in the case of oil -- that the poor are betrayed as the tax is weakened and withdrawn. This would mean becoming energy efficient on the backs of the poor, and would be unconscionable. Moreover, decontrol should not be immediate but should be phased in over two or three years so consumers have time to make protective investments to cushion them from the shock of higher prices.

Mr. Chairman, now is a good time to correct the flaws in the NGPA. Gas is not in short supply, the oil market is currently slack, and -- with luck -- the U.S. economy is likely to experience stable oil prices in the short run. If Congress does not act now, it is highly likely that price controls will be reimposed into the 1990's in order to avoid a price spike in 1985. A major obstacle to deregulation may be the contract problem, which threatens to force gas prices above long-run market clearing levels.

Natural gas decontrol would accelerate the introduction of more efficient equipment, such as storm windows, cogeneration, pulse-combustion furnaces, fuel cells and industrial heat pumps. Thus (and paradoxically) the opportunity to control energy prices grows considerably as energy prices are decontrolled.

Decontrol would also rid us of rolled-in pricing and thus remove the economic crutches from synfuels and many other polluting energy projects. In other words, deregulation would remove the opportunity to subsidize expensive gas supplements by rolling such gas in with artificially cheap gas. Synfuels cannot compete economically with decontrolled gas. And the new supplies of gas brought about by higher prices would underscore the absurdity of subsidizing this new industry with scarce federal dollars -- an industry which can only produce a substitute for natural gas at a price which is far in excess of the price of decontrolled gas.

Some people will object to changing NGPA because Section 107 gas -- deep gas -- will no longer receive very high prices (up to $10 per Mcf or about $60 per barrel of oil equivalent). Deep gas commands such a high price because it is rolled-in with price-controlled gas. But deep gas should not be given an unfair advantage. Gas should be produced and developed starting with the most cost-effective investments. If this means that exploration and development of deep gas slows a little until gas prices rise, then so be it.

Some people in favor of continued controls will say that even with a windfall profits tax, the size of the transfer of wealth from consumers to producers is too massive to allow. But this just shows how far we have to go to achieve replacement pricing, and how we are mortgaging our future to an expensive high energy infrastructure.

The National Audubon Society urges this Committee to support accelerated decontrol of both new and old gas with a windfall profits tax on old gas, the revenues of which would be specifically targeted to protect the poor.

Mr. Chairman, that concludes my testimony. I would be pleased to answer any questions.

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Senator NICKLES. Mr. Cooper?

STATEMENT OF C. WILLIAM COOPER, VICE CHAIRMAN AND GENERAL COUNSEL, UNITED DISTRIBUTION COS.

Mr. WILLIAM COOPER. Thank you, sir. My name is William Cooper, representing the United Distribution Cos. It is an ad hoc group of companies representing about 20 percent of the distribution throughout the country, mostly in the Midwest and the Northeast.

We are very happy to be here, and we think that legislation must be enacted.

Senator Ford, in response to your question, we believe that the contracts problem which is what brings us here in the main cannot be answered administratively. On the contracts problem, which we think is critical, we differ, Senator Johnston, from your proposed solution and from that proposed by Representative Gramm for several reasons.

We think in the first place that the protection against these sort of contracts, both the price-free determination and take or pay contracts, must be applied to all contracts, not just existing contracts, and it must be a permanent contractual standard resolution of the problem, and I for one was representing the distribution companies before the Phillips case. We had tremendous problems then with price-free determination. It cannot be answered just by dealing with existing contracts or dealing with them for just a short period.

We think that is true of both price-free determination and take or pay, and we submit in our statement a proposed solution to both those contractual situations which we submit to you.

On the matter of decontrol which also brings us here, we are opposed to the sudden decontrol of the old gas. The market for gas cannot absorb the price increases of that magnitude in that short period that many people are proposing. We do suggest that there be deregulation of any new reservoirs to help broaden the drilling effort for gas beyond that, beyond the kind of limited drilling that Mr. Taliaferro was supporting; we think the drilling effort should be broadened and that all new reservoirs should be deregulated.

We also, as our statement points out in detail, feel that your committee must get into one problem that has not been mentioned by anyone in these hearings so far, and that has to do with the matter of the efficient transmission of pricing signals through the gas pipeline industry. Now that was a problem of decontrol which was not considered at the time NGPA was enacted. It is a serious problem and we believe that it cannot be taken care of administratively, although we are considering a petition to the Commission about that.

We submit that you must consider a congressional direction to FERC to promulgate rules that have a bearing on pipeline rate design so that the price limitations of the market will be effectively communicated back to the field.

We have laid out the details of that in our statement which I submit to you. We would be glad to answer questions about any of these things. We would be glad to appear at subsequent hearings about them.

[The prepared statement of William Cooper follows:]

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

HEARINGS ON NATURAL GAS POLICY AND REGULATORY ISSUES
MARCH 22 AND 23, 1982

Statement of
C. William Cooper
Vice Chairman and General Counsel
United Distribution Companies

THE VIEWS AND RECOMMENDATIONS OF AN IMPORTANT GROUP OF UTILITIES RESPONSIBLE FOR SERVICE TO THE GENERAL PUBLIC

March 23, 1982

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FOREWARD

UNITED DISTRIBUTION COMPANIES DESCRIBED

United Distribution Companies (UDC) is an ad hoc group of organizations engaged in rendering gas utility service to the general public.

UDC was formed in 1969 as a result of growing gas shortages; and it, thereafter, participated in all "field price" proceedings under the Natural Gas Act, in an effort to see that sound, increased rates were established.

Since the passage of the Natural Gas Policy Act in 1978, UDC has sought to see that practical rules were issued for its implementation.

The growth in problems facing the industry now leads UDC to take part in legislative matters.

There are 32 organizations in the Group at this time; and their service aggregates over 20% of all gas utility service throughout the United States.

The members render service in the states of:

ARKANSAS
ILLINOIS
INDIANA
MICHIGAN
MISSOURI
NEW YORK
OHIO
PENNSYLVANIA
WEST VIRGINIA
WISCONSIN

Among the metropolitan areas served are:

Akron
Albany
Buffalo
Chicago
Cleveland
Dayton
Detroit
Indianapolis
Jackson
Milwaukee
Pittsburgh
Peoria
Rochester
Syracuse
Toledo

The names of the companies and their places of service are set forth on the next page.

MEMBERS OF UNITED DISTRIBUTION COMPANIES

Company	State of Operation	Principal City Served
ASSOCIATED NATURAL GAS CO.	Arkansas and Missouri	Blytheville
BATTLE CREEK GAS COMPANY	Michigan	Battle Creek
CENTRAL ILLINOIS LIGHT COMPANY	Illinois	Peoria
CENTRAL ILLINOIS PUBLIC SERVICE CO.	Illinois	Springfield
CITIZENS GAS & COKE UTILITY	Indiana	Indianapolis
CITIZENS GAS FUEL COMPANY	Michigan	Adrian
CONSOLIDATED GAS SUPPLY CORP.	West Virginia	Clarksburg
CONSUMERS POWER COMPANY	Michigan	Jackson
THE DAYTON POWER AND LIGHT COMPANY	Ohio	Dayton
EAST OHIO GAS COMPANY	Ohio	Cleveland
EQUITABLE GAS COMPANY	Pennsylvania	Pittsburgh
ILLINOIS POWER COMPANY	Illinois	Decatur
INDIANA GAS COMPANY	Indiana	Indianapolis
KOKOMO GAS AND FUEL COMPANY	Indiana	Kokomo
MICHIGAN CONSOLIDATED GAS COMPANY	Michigan	Detroit
MICHIGAN GAS UTILITIES COMPANY	Michigan	Monroe
MISSOURI UTILITIES COMPANY	Missouri	Columbia
NATIONAL FUEL DISTRIBUTION CORP.	New York	Buffalo
NIAGARA MOHAWK POWER CORPORATION	New York	Syracuse
NORTH SHORE GAS COMPANY	Illinois	Chicago
OHIO GAS COMPANY	Ohio	Bryan
ORANGE & ROCKLAND UTILITIES, INC.	New York	Spring Valley
THE PEOPLES GAS LIGHT AND COKE CO.	Illinois	Chicago
PEOPLES NATURAL GAS COMPANY	Pennsylvania	Pittsburgh
RICHMOND GAS CORPORATION	Indiana	Richmond
RIVER GAS COMPANY	Ohio	Marietta
ROCHESTER GAS & ELECTRIC CORP.	New York	Rochester
THE TOLEDO EDISON COMPANY	Ohio	Toledo
WEST OHIO GAS COMPANY	Ohio	Lima
WISCONSIN FUEL AND LIGHT COMPANY	Wisconsin	Manitowoc
WISCONSIN GAS COMPANY	Wisconsin	Milwaukee
WISCONSIN NATURAL GAS COMPANY	Wisconsin	Racine

I
INTRODUCTION

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

My name is C. William Cooper. I am in the general practice of law and serve as Vice Chairman and General Counsel to United Distribution Companies. I have represented UDC since its inception in 1969.

Prior to 1969, I was for many years counsel to, and an executive of, The Consolidated Natural Gas System, and its predecessors. In those capacities I represented producers, pipelines and distribution utilities. When I resigned from Consolidated in 1969 to re-enter general practice, I was its Executive Vice President and General Counsel.

I am accompanied by Richard M. Merriman of the firm of Reid & Priest, UDC's Washington counsel.

We much appreciate this opportunity to appear before your Committee and present the views of an important segment of the distribution industry.

This hearing of your Committee is timely and important. The natural gas industry is faced with problems of such critical nature that new legislation must be enacted. We, respectfully, urge that this must occur prior to the onset of major deregulation on January 1, 1985.

The distribution utilities of this Nation must play an important role in this legislative process. Within the gas industry, they, and they alone, are responsible for seeing that sound assured utility service is rendered to the general public, now and for the indefinite future. They now see, with apprehension, that that public service is gravely threatened by the course of events since the passage of the Natural Gas Policy Act and also by certain proposals now being made for the amendment of that statute.

Our purpose, at this initial hearing of your Committee, is to lay forth the "gut" problems and proposals as we see them; and, on these, we will set forth the positions and recommendations of these distribution utilities. As a basis therefor, we will refer to the statement of legislative policy issued by UDC on December 22, 1981, a copy of which is attached hereto and marked Appendix A.

As stated above, the distribution utilities are responsible for utility service. In this unique position, the utilities must do their best to see that upstream producers and pipelines are fairly treated, in the interests of long term supply; that ultimate users are fairly treated; and that utility service remains strong and healthy. We earnestly submit that the recommendations made herein are conducive to all of these ends and, therefore, represent sound National Policy.

II
SUMMARY STATEMENT OF PRIMARY PROBLEMS AND RECOMMENDATIONS THEREON

It appears to UDC that the primary problems now facing the Congress, and broadly affecting the whole public interest across this Nation, fall in three categories:

First and foremost: The "Contracts Problem".

What shall be done in the public interest about the price redetermination clauses and take-or-pay clauses which now infect the long term contracts of producers and pipelines?

UDC recommends that the Congress:

(1) proscribe all indefinite price redetermination clauses and favored nation clauses in both existing and future contracts, and substitute, in lieu thereof, a process of periodic price renegotiations between the parties; and

(2) provide for sound limitations on, and standards for, take-or-pay clauses in both existing and future contracts.

Second: The "Decontrol Problem".

What shall be done in the public interest about the numerous proposals that Congress alter NGPA's existing deregulation provisions?

UDC respectfully recommends that:

(1) "Old Gas" must remain under regulation as now provided;

(2) there should no "ramping-up" of existing prices prior to January 1, 1985; and

> (3) "new, new reservoirs" (Section 102(c) gas) should be deregulated at the earliest possible point in time, in order to broaden the exploratory effort.

Third: The "Market Signal Problem".

> What must Congress do in the public interest to insure that decontrol of field prices will really work in a sound economic fashion in this otherwise regulated industry? This was a problem wholly overlooked when NGPA was enacted, but it is now of major import.
>
> UDC, respectfully, recommends:
>
> > that Congress enable and require the Federal Energy Regulatory Commission to establish rules for pipeline rate design in accordance with the principles described below and in UDC's statement of December 22nd.

UDC believes that the resolution of these three classes of problems in the manner set forth above will place the gas industry on a sound and viable footing during 1985 and thereafter. We, therefore, respectfully recommend them to your Committee.

III
THE "CONTRACTS PROBLEMS" AND PRACTICAL SOLUTIONS THERETO

A. INTRODUCTION

The problems created by both price escalation and take-or-pay clauses are set forth in some detail in UDC's December 22nd statement attached as Appendix A, hereto.

In this statement today, it does not seem necessary to repeat or emphasize that analysis. The interstate pipelines, themselves, emphasize the "box" into which the industry has been placed by these contractual provisions; and all distribution utilities and users are joining in this chorus of condemnation.

Suffice it to say that the situations which these clauses present are critical. They can wreck the public service when decontrol takes hold. Something must be done about them prior to January 1, 1985.

The question is not whether the problems exist. The question is: What should be done about them? And on this people differ.

We will set forth the several points of view and recommended solutions.

B. PRICE REDETERMINATION CLAUSES

Price redetermination clauses of all types -- definite, indefinite and favored nation -- are injected into long term contracts by producers for the purpose of escalating the fixed or stated contract prices over time. And, in principle, there can be no objection to the periodic adjustment of contractual prices to current market value as the term of any long term contract proceeds. It is very difficult to arrive at long term fixed prices for any commodity; and it is, therefore, common practice to provide for reasonable adjustments.

The trouble now before us is that, in the seller's market which has existed in recent years of declining pipeline reserves, producers have insisted upon, and pipelines have agreed to, redetermination provisions which will inevitably carry decontrolled prices above market clearing levels.

We will consider the several proposals now being advanced as possible solutions and present UDC's recommendation in light thereof.

(1) The voluntary work-out proposals are unsound:

Many producers and some in government contend that the producer-pipeline parties to the contracts will naturally renegotiate the clauses in such manner that they will not harm public service when the time comes. And this would be a happy solution if one could count upon it.

But, in point of fact, such renegotiations could not occur in time, and probably would not occur at all. On the producer side of the fence, there are so many competing forces and so many royalty and other legal interests involved that the renegotiations cannot occur. This is proven by the fact that the pipeline parties to the contracts categorically concede that the producers will not or cannot renegotiate. Congress cannot count on any other result.

(2) The "cap" proposals are insufficient:

The contention is made by some that the proper solution is for Congress to impose a "cap" which will limit the operation of the clauses to a figure derived from a formula specified by Congress -- a popular proposal being 70% of the price of crude oil.

There would be merit to this concept if one could be sure that the results of the formula would coincide with future market clearing prices for gas. But would 70% of the price of crude oil, for example, coincide with market clearing prices for gas as they vary from time to time? To answer "Yes" to that question is both dangerous and probably wrong.

If in fact the formula price proved too high the results would be almost as bad as those achieved by the unfettered clauses. If, on the other hand, the price proved too low, it would not perform its intended job.

In short, the "cap" or formula concept represents a chancy solution to a most difficult problem; and UDC respectfully suggests that a sounder solution is available. and should be used. This we will discuss below.

(3) The "existing contracts" proposals are insufficient.

Many persons contend that Congress need deal only with existing contracts, trusting that producer-pipeline contracts of the future will not get us back into this intolerable box.

That argument is like the ending to many novels where it is said that the lovers will live "happily ever after."

But in the era of deregulation prior to the 1954 Phillips decision, the distribution utilities were faced with just the same kinds of bad redetermination clauses that have again blossomed forth in recent years. That is shown by the records of Congress. We earnestly submit that public policy cannot be predicated on the hope that such will never again be the case. If existing contracts alone are dealt with, the industry will probably be back again, two or three years from now, clamoring for relief from iniquitous clauses which have shown up in "new, new" contracts.

We respectfully recommend that sound standards must apply to both existing and future contracts.

(4) Proscription alone is not the answer.

Some persons, who recommend proscription of indefinite price redetermination and favored nation clauses, suggest no substitute relief for the producers. This half-way solution, we believe, would represent unsound policy.

While UDC shares the view that the clauses should be proscribed, this step alone leaves the fixed price long term contracts in an unfair and dangerous condition. It ties the producer in all existing long term contracts to low fixed prices which are unrealistic when applied over the full term of the contracts. The result will frustrate the intent of the parties and reduce or inhibit long term supply. Room must be left for sound escalation of fixed prices in existing contracts.

Furthermore, future long term contracts cannot be tied to fixed prices alone. There must be room for changes -- up or down -- so that contract prices keep pace with fair field values for gas.

(5) Proscription coupled with the substitution of periodic renegotiations is recommended.

Having in mind prior history, UDC recommends that Congress proscribe all indefinite price redetermination and favored nation clauses -- both existing and future -- and provide that there shall be substituted therefore provisions for the periodic redetermination of contract prices through renegotiation by the producer and pipeline parties. In this way prices should adjust themselves -- up or down -- to sound current market values in the field.

There is always the possibility that the parties will fail to agree on the new price; and there are two possible ways through which that eventuality can be accommodated: arbitration and counter offers. As set forth in Appendix A, UDC recommends that, of these two alternatives, that involving "counter offers" be utilized. This means that if price renegotiations fail, the producer may seek counter offers for the gas from other parties. Such offers will demonstrate the current market value for the gas in the same fashion as renegotiations between the parties.

C. TAKE-OR-PAY CLAUSES

Take-or-pay clauses are analyzed in some detail in Appendix A, and we, respectfully, believe that that presentation fairly states the critical problems which they present.

In essence, the trouble is: In the seller's market which now exists, producers have demanded and received overwhelming take-or-pay protection -- far beyond that justified by their legitimate need for protection of cash flow and reserves. If enforced against the market in times of load loss or slack demand, the unduly high payments so required can bankrupt the downstream sections of the industry.

Again, as in the above discussion of price redetermination clauses, UDC submits that the problem cannot be left to voluntary renegotiations between producers and pipelines. If sudden load loss occurs, financial disaster would strike before effective relief could come.

Public policy must dictate that producer-pipeline contracts be limited to provisions which strike a fair and reasonable balance reflecting:

(1) cash flow and reserve protection which is essential to the producer; and

(2) operating flexibility which is essential to the market.

To this end, it is respectfully submitted that Congress must intervene.

UDC does not recommend that Congress legislate a specific take-or-pay formula. That could prove both difficult and unfortunate. Rather, as set forth in Appendix A, Congress should require that take-or-pay clauses follow either the historical reserve work-off formula of the industry or be limited to reasonable percentages of daily deliverability which are specified for the class of gas involved by the rules of an appropriate federal agency.

It is also recommended that all take-or-pay provisions require the producer to make up, on later call of the buyer, quantities of gas which have been paid for but not taken. Most contracts so provide -- but some glaringly do not.

IV
THE "DECONTROL PROBLEMS" AND PRACTICAL SOLUTIONS AND POSITIONS

A. SOME DEFINITIONS

In common parlance, the term "old gas" is applied to that gas which was connected into the interstate system prior to the adoption of NGPA and which that statute continues in permanent regulation.

The term "new gas" is commonly applied to gas which has been and will be developed since the enactment of NGPA.

The term "new, new gas" commonly means those classes of new gas which in the future would be given special "decontrol" or other pricing benefits by an amendment to NGPA.

B. "OLD GAS"

Most producers and intrastate pipelines and many in government vigorously contend that the existing cushion of old gas leads to grave market disorders and that it gives undue preferences to some persons in the acquisition of new supplies. It is said that this favors interstate pipelines over intrastate pipelines; and that, in like fashion, interstate pipelines blessed with large amounts of such embedded supply are favored over others which have smaller cushions of such gas.

Furthermore, it is generally contended by all of these persons that, while NGPA intended that the benefits of this low-priced cushion should inure to ultimate users, this result will not occur. In support of this contention it is said that the rolled-in formulae used by interstate pipelines enables producers of decontrolled gas to achieve inordinate prices above market clearing levels; and that, when these inordinate prices are rolled-in with the cushion, the poor consumer pays the same price he would pay if all gas were deregulated.

On the basis of these arguments, proposals are being made that all "old gas" be deregulated on January 1, 1985, or on January 1, 1986.

These arguments are made with great force and vehemence; but, looking at the matter from the standpoint of utility service and its ultimate users, the following response is urged:

In the first place, if all gas is deregulated on January 1st of 1985 or 1986, as so proposed, the sudden transfer of wealth commencing on that date will be tremendous -- far far greater than utility service can reasonably or possible absorb in one fell swoop, or even over a year or so. Increases in utility rates are difficult at best, as everyone in Congress well knows; and the passing through of the projected increases would be impossible. In comparison the price changes which occurred upon the deregulation of old oil were "peanuts"; and the monumental shock as to gas just cannot be forced through upon the public.

In the second place, the contention that the consumer will pay the same price anyway, overlooks the questions of degree and time. Prices for old gas are embedded and prices for new gas -- even if above market clearing levels -- are only paid as that gas comes on stream. Unless the same were forced wholly "out-of-bounds" by the operation of price redetermination clauses in 1985, increases in the aggregate rolled-in price will occur over time as new discoveries come on stream and not all at once.

In the third place, even if it is assumed that the ultimate user will pay the same amount of money, at least the higher prices will have been devoted to the exploration and development of essential new reserves. Money paid to a producer for old gas can be used, according to his whim, for any corporate purpose; but money paid for new gas reflects the results of new exploration and discovery.

Lastly, in response to the argument that the embedded cushion favors some pipelines over others, it may be said that users supplied by the favored interstate pipelines long since provided the market for this cushion reserve and the same has been dedicated to this service. As a matter of reason and equity, these users should receive the benefit of that dedication.

In light of the foregoing, UDC recommends that "old gas" remain under regulation.

C. "RAMPING UP"

Under NGPA, new gas developed since the statute was enacted, will be deregulated on January 1, 1985; and many producers and governmental officials contend that the prices of this gas should be "ramped up" in the intervening period toward an estimated price deemed equal to the market clearing price. Those who favor the deregulation of old gas make this same contention as to that class of gas.

Most of these proposals came into being in 1981 when it was thought that legislative action would be taken by Congress in the early part of 1982. And the suggestion was viewed as a means of softening or averting the threatened "price spike" of 1985.

But it is now conceded by all concerned that legislation will not occur until late in 1983, or possibly in 1984. The potential "ramp-up" period is shrinking into insignificance. And, if sound action is taken to prevent inordinate price redetermination, as discussed above, prices in 1985 will be held by renegotiation to market clearing levels. The threatened price spike will not occur.

Furthermore, the estimated market clearing prices to be used in any such "ramping up" can be far from the mark; and prices could be artificially carried to levels above those which will be achieved through renegotiations between the parties.

UDC most earnestly recommends that these dangerous and costly changes should not be made and that the pricing changes should not be made and that the pricing schedules for "new gas" and "old gas" remain as stated by NGPA.

D. "NEW, NEW GAS"

In an effort to encourage increased explorations for new reservoirs of gas throughout the Nation, UDC has recommended in its December 22nd statement that future "new, new" reservoirs as defined in Section 102(c) be decontrolled -- provided effective relief from price redetermination and take-or-pay clauses is granted.

This step will not only increase the base of supplies for public service; it will provide a larger number of new negotiated prices prior to the general decontrol of new gas on January 1, 1985.

In comparison with this proposal, producers and many in government are contending that all new, new wells be decontrolled, subject to a price "cap."

UDC strongly urges that the decontrol of all new, new wells is contrary to the public interest. Any such broad alteration in the statute would merely concentrate producer efforts upon "infill" drilling in existing reservoirs -- for the purpose of deregulating the prices for old gas. New exploration would suffer and the overall supply for public service would not be increased.

While the remaining time following legislation in 1983 or 1984 will be short, UDC recommends the decontrol of "new, new gas" covered by Section 102(c) in the manner set forth in its Statement of December 22nd, Appendix A hereto.

V

THE "MARKET SIGNAL PROBLEM"

A. INTRODUCTION

In any industry dealing in an unregulated natural resource, such as oil, coal or metals, the prices for the resources in the field normally reflect the demand/price situation of the ultimate market, and fluctuate as the signals from that market dictate.

Thus, the posted prices for deregulated oil fluctuate as the demands and prices of the ultimate market for gasoline and other refined products fluctuate. At this point in time, for example, we see prices for crude oil declining as conservation takes hold in the market.

For any decontrolled resource, it is imperative that this clear and effective transmission of pricing signals reflecting market forces occur. Yet, by reason of the fact that interstate pipelines operate under the regulatory strictures of the Natural Gas Act, UDC is gravely concerned that this will not occur and that decontrol will not operate as it should.

B. PIPELINE RATE DESIGN

Under the Natural Gas Act and regulations developed over long periods of time thereunder, interstate pipelines sell gas at rates which reflect a form, or so-called "design", developed in periods when field prices were held at abnormally low levels by federal regulation. No one saw any need for highlighting gas field prices as they were flowed through to market; and the same were customarily lumped together with costs of operating transmission facilities -- particularly in the tremendous in-tandem sales which occur from one pipeline to another as gas moves to market.

Furthermore, the force and effect of these rate designs has been to apply to field supply costs high minimum bill requirements instituted in the first instance for the recovery of transmission costs.

The ultimate result of the rate design is that distribution company takes of the resource cannot fluctuate as they would in a free market and normal "market signals" cannot flow, as they should, back to the producers in the field.

UDC believes that market signals will be more effectively communicated through use of rate designs which clearly separate field prices from transmission costs, all the way from the well to point of sale to distribution utilities for utility service. By making this separation and using reduced minimum bills designed for these supply costs as such, utility service can effectively react to field prices. Field prices for gas will then fluctuate in the same manner as crude oil prices fluctuate. They will, as they should, clearly reflect the forces of the ultimate market.

The implementation of these necessary institutional changes require legislation. Under the Natural Gas Act, as construed by court decisions, it is very difficult for the Federal Energy Regulatory Commission to initiate and implement rate design changes through rulemakings. At the same time, Congress itself cannot effectively design rates.

But Congress can, and customarily does, require the Commission to enact rules which will achieve a specified purpose. Thus, UDC recommends that Congress adopt an amendment to the Natural Gas Act requiring the Commission to enter upon and promulgate rules requiring pipelines to separate out, and charge distinct commodity rates for, their gas supply costs. The details of the proposal are set forth in UDC's Statement of December 22nd and we respectfully commend them to the Committee for its consideration.

As stated earlier, this vital subject was wholly overlooked when NGPA was enacted in 1978. At that point in time, decontrol looked much simpler than it is proving to be. The subject now deserves full consideration and a sound solution.

VI
RECOMMENDATIONS

In conclusion, the position of UDC comes down to three basic points:

1. That legislation effectively dealing with the "contracts problem" prior to January 1, 1985, is of dire necessity to the public interest; and that the same should provide, in essence:

   (a) that periodic price renegotiations should be substituted for all indefinite price redetermination and favored nation clauses in both existing and future contracts; and

   (b) that fair and reasonable restrictions designed to protect both producers and market should be required for take-or-pay clauses.

2. That only one change should be made in the decontrol and pricing provisions of NGPA, i.e. the decontrol of "new, new" reservoirs covered by Section 102(c); and

3. That Congress should impose upon the Commission the duty to promulgate rules for pipeline rate designs which will promote transmission of pricing signals from public service back to the producing field.

We most sincerely commend these positions for your consideration.

Respectully submitted,

UNITED DISTRIBUTION COMPANIES

Appendix A

TO MAKE DEREGULATION WORK IN THE PUBLIC INTEREST, THE NATURAL GAS POLICY ACT OF 1978 MUST BE AMENDED

STATEMENT OF UNITED DISTRIBUTION COMPANIES

an ad hoc group of 30 organizations
engaged in the rendition of
gas utility service to the general public

United Distribution Companies
by its Chairman

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December 22, 1981

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FOREWORD

The names, states and principal areas of operation of the several Members of United Distribution Companies (herein called "UDC") are listed in Appendix A to this statement.

The members render service in the states of:

ARKANSAS
ILLINOIS
INDIANA
MICHIGAN
MISSOURI
NEW YORK
OHIO
PENNSYLVANIA
WEST VIRGINIA
WISCONSIN

Among the metropolitan areas served are:

Akron
Albany
Buffalo
Chicago
Cleveland
Detroit
Indianapolis
Jackson
Milwaukee
Pittsburgh
Peoria
Rochester
Syracuse
Toledo

Formed in 1969 as a result of the national shortage of supplies available to their interstate pipeline suppliers, UDC's efforts have been devoted to increasing the energy base through betterment of Federal regulatory policies.

Prior to NGPA, UDC regularly participated in all area and national rate proceedings before the Federal Power Commission and Federal Energy Regulatory Commission. Since NGPA, UDC has participated in a host of rulemakings under that statute in an effort to achieve constructive and practical means for its implementation.

For the reasons herein set forth, UDC believes that NGPA must be amended.

The name, address and telephone number of the person to whom communications with regard to this matter may be addressed is:

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Counsel of United
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TO MAKE DEREGULATION WORK IN THE PUBLIC INTEREST, THE NATURAL GAS POLICY ACT OF 1978 MUST BE AMENDED

I
INTRODUCTION

As The Natural Gas Policy Act of 1978 (NGPA) marches toward deregulation of "new" gas in 1985, many in industry and government are convinced that the statute as drawn has set in motion a "time bomb" for energy policy and utility service. Among the major concerns are:

The threatened "price spike" of 1985;

The excessive prices which will be caused by price redetermination clauses following deregulation;

The wasteful and burdensome effects of take-or-pay clauses following deregulation;

The outlandish $9 and $10 prices being paid for Section 107 gas;

The absence of any effective mechanism within the industry for transmitting market "signals" from utility service back to producers;

The potential chaos in utility service through loss of essential markets, due to prices above market clearing levels; and

The potential bankruptcy of distribution utilities by flow-through of unmarketable prices.

All these and other problems being widely discussed emphasize that moving from stultifying regulation to ultimate deregulation--though necessary to sound energy policy--will be a process of great moment and complexity--far more complex than was envisioned when NGPA was considered and fraught with grave public harm if not properly implemented.

All of these problems stem from the peculiar nature and structure of the natural gas industry--far different from the oil industry where deregulation was smooth and orderly. The trouble as to gas comes, in essence, from the difficulty of achieving sound field values for gas in the face of contractual methods and pipeline rate designs, which were developed in an era of stiff field regulation and short supply and which will frustrate the proper action of a free field market.

The potential for disaster is there! And the task still set before industry and government is to insure that this will not occur. Simply stated, the task is to insure that gas in the field will attain sound free market values in a smooth and orderly fashion without disruption of gas utility service.

Hopefully, all elements of the gas industry can join in supporting similar legislative changes which will protect the public against these disastrous consequences; and UDC will gladly enter into legislative discussions looking to this end.

With the foregoing in mind, UDC herein presents, for consideration, four statutory concepts which we believe to be in the best interests of all concerned--producers, pipelines, distribution utilities, consumers and the National economy.

II
SUMMARY STATEMENT

One must recognize, as fundamental, that the value of gas, oil or any other resource in the field depends directly on the retail market for which it is produced. This was dramatically demonstrated as to natural gas in earlier days, when, for lack of pipeline connections to areas of utility service, this resource was flared at the well as a worthless by-product of oil drilling.

Indeed, it is self-evident in this industry that, while large quantities of natural gas are used for chemical and other direct industrial applications in or near the field, the bread and butter market on which the real worth of natural gas has, and always will, depend is utility service throughout this Nation. And, for natural gas to be properly valued, there must be a valid relationship between the demand/price tolerances of utility service and the prices received by producers at the well. In essence, all of the concerns expressed above stem from the growing fear that this relationship will not occur.

The feared price spike in 1985, for example, will result from the sudden deregulation of large quantities of gas in total absence of an established free market and with no communication to the field of the demand/price limits of retail utility service. It is feared that the natural attempt of producers to drive prices sky-high after years of frustrating regulation will cause wholesale losses of utility service before market forces can achieve sound market clearing prices. And, in the meantime, utility service will have been decimated.

The fear of price redetermination clauses, to take another example, stems from the fact that the redetermination rights appearing in many old producer contracts, and being inserted in all new producer contracts, bear no relation to, and will drive field prices above, the pricing limits which can be absorbed by retail gas markets--in short, above sound market clearing prices.

After long and earnest consideration of these prospects, it is believed that valid free markets in the field will come into being only if supplementary amendments to NGPA correct and improve four critically important aspects of the situation. Other changes may also be addressed, but these four are deemed critical to the public interest. They are discussed in some detail below and may be summarized as follows:

(1) Periodic Price Adjustments under Deregulation: Redetermination of prices through indefinite pricing clauses and favored nation clauses of the kinds now in use should be proscribed; and periodic renegotiation of prices should be substituted therefor. This will insure that adjustments of price reflect current market values and not arbitrary formulae and facts bearing no relation to the value of gas in the field.

(2) Rates of Take under Deregulation: Sound and reasonable standards should be imposed upon take-or-pay clauses in both existing and new contracts. This is essential to avoid wasteful marketing practices and possible bankruptcy of pipelines and distribution utilities as deregulation of field prices comes into being.

(3) The Timing of Deregulation: Assuming the statutory improvements provided in paragraphs (1) and (2) above are legislated, then, all "new natural gas" defined in Section 102(c) and discovered after the date of amendment should be deregulated, so that the same may rise to a sound market clearing level. This will reorient and enlarge the exploratory effort and promote a broad free market prior to 1985. The industry will progressively get its "feet on the ground"; and the tremendous thump in 1985 will be avoided or ameliorated in large degree.

(4) Pipeline Rate Designs for Deregulation: New pipeline rate designs need to be implemented through FERC rules that will insure that the price tolerances and signals of retail utility service will be transmitted back through the pipelines to the fields of gas production--the purposes being to achieve sound field values, proper supply planning by pipelines and continuity of pipeline service.

These recommended institutional changes, it is believed, will have the following beneficial results:

(a) A valid free market for gas in the field will be achieved in more orderly fashion, without disruption of utility service and the National economy.

(b) The demand/price situation of the ultimate market for natural gas will be communicated upstream to producers and pipelines in an orderly and effective manner. This will cause natural gas in the field to be valued and priced on correct free market principles.

(c) Periodic changes in contract prices for gas in the field will reflect, as they should, the fair market value of gas in the field at the time of price change.

(d) The taking of gas from producers will be related to the demands of utility service.

The foregoing changes, while protecting utility service, are likewise in the best interests of producers, since, in the long run, the value of their resource depends on the health and vitality of that service. It is believed, in short, that the proposed contractual principles, timing of deregulation, and rate designs will serve the best interests of producers, transporting pipelines, distribution utilities, consumers and the National economy.

III
PERIODIC PRICE ADJUSTMENTS UNDER DEREGULATION

Indefinite price redetermination clauses and favored nation clauses are blossoming forth in every new long term contract executed since NGPA was enacted in 1978--and far more than half of the "old gas" contracts in effect at the time NGPA was enacted bear provisions of this type, even though they were to be inoperative so long as regulation persisted. In all cases, the purpose of the producers is to escalate all prices for supplies deregulated in 1985 and to insure, thereafter, that prices continue to escalate in accordance with pricing formulae set forth in the contracts.

In principle, there can be no objection to the periodic adjustment of contractual prices to current market value. And, if this were the force and effect of price redetermination and favored nation clauses, there would be no objection to the same. The catastrophic effect of clauses now in being, however, is that they will inevitably and arbitrarily increase field prices above those market values which can be tolerated by the ultimate market--in short, above market clearing levels. The consequences to utility service will be disastrous. A few examples illuminate the prospects:

(1) In almost all contracts, one alternative basis for the price which the producer may elect during redetermination is the highest price being paid by a purchasing pipeline,

or by two or more pipelines. Frequently, that highest price will reflect unusual and abnormal circumstances which bear no relation to sound market values for all reserves of gas in a field or area. Yet, the contagion or "domino" effect of price redetermination and favored nation clauses will cause all deregulated prices to rise to this highest price.

(2) Another pricing basis which the producer is permitted to elect is the price for No. 6 oil or No. 2 oil. Obviously, these market prices for refined oil (which reflect transportation and refining costs) offer no guide to, or measure of, the market value of another natural resource in the field where produced. This is an arbitrary result with which utility service cannot compete; and, if implemented, it will force major volumes of retail use from gas to oil, or even electricity.

(3) Another pricing basis which a producer may elect is escalation in accordance with the Consumer Price Index or other specified indices. This, again, is an arbitrary test bearing no relation to market values of gas in the field. Trends of consumer costs for goods and services--reflecting supply and demand factors bearing on the consumer market--can, at any point in time, be in direct opposition to those which portray values of gas in the field.

By way of comparison, posted prices for crude oil in the field are determined by neither the Consumer Price Index, nor the market costs of another fuel, nor the highest prices paid by any buyer. They are directly determined by the free market operation of the demand, supply and marketing forces applicable to crude oil as such.

Redetermination of the field prices for gas cannot be permitted to force prices above market clearing prices and, hence, above those which the retail market for gas can absorb. This is in direct contravention of a valid resource market. Yet, it is obvious that price redetermination and favored nation clauses do just this. They will force arbitrary and unnatural prices into the market system, cause irremediable load losses, and, thereby, promote market chaos and possible bankruptcy of the utility system.

Furthermore, the process created by these clauses is an ever upward ratchet taking gas to, and thereafter maintaining, new plateaus. Producers, year after year, may elect, from among several alternative factors, that which will, each time, carry prices to the highest level; and "domino" effects will carry all prices to this level. Even though the chosen economic factor (say No. 2 oil) thereafter drops in value, the contracts prevent the escalated prices for gas from dropping. Once up, the contracts keep gas prices up, awaiting the time when another economic factor will carry them still higher. These effects are contrary to all free market economic principles.

It should be emphasized that this was an institutional problem which did not surface at the time NGPA was considered. It was a sleeper. While the industry suffered bad experiences from indefinite price redetermination and favored nation clauses in the late 1940's and early 1950's--as the records of Congress clearly show--their operation had been banned for many years by regulation. Now, with the coming of deregulation, they have resurged in ways which a sound resource economy cannot tolerate. Like other bad business practices, they cannot continue.

In the interest of all concerned--including the long term interest of producers--Congress should proscribe all indefinite price redetermination and favored nation clauses, excepting from this ban only Commission approved "area rate" clauses of the kinds in use prior to NGPA.

At the same time, some sound method of periodically adjusting long term contractual prices to current market value of gas in the field must be provided in lieu of these proscribed clauses. In these shifting economic times, parties cannot tie themselves to specific prices for long terms; and to insure that long term committments can be made and will be carried out, periodic adjustments must occur.

The most accurate method of adjusting deregulated prices in long term contracts is through periodic price renegotiation, with either producer or pipeline having the right to call for the same. The results of these negotiations will necessarily represent the current market value for gas in the field; and contractual prices will go up or down as the varying forces of supply and demand may dictate. If, after renegotiation, the parties cannot agree upon an adjusted price, then the producer should be free to invite offers for the sale of the subject gas to other buyers, with the prior pipeline purchaser having the right of first refusal of any bona fide offer by another buyer.

Obviously, renegotiations of large numbers of contracts present administrative problems, particularly as the industry adjusts itself to the task. But patterns, techniques and short term measures will soon develop; and, in any event, problems of administration cannot justify retention of methods which are wholly one-sided and hold promise of crucifying the market.

Accordingly, it is recommended that Title I of NGPA be supplemented with a new Subtitle C providing that:

(1) Indefinite price redetermination clauses of every kind and description, including favored nation clauses, but excepting Commission approved "area rate" clauses in use prior to 1978, would be proscribed and rendered null and void in both existing and new contracts for the first sale of natural gas. At the same time, it should be made clear that the exception of "area rate" clauses from such prohibition would in no way broaden or enlarge historic principles of interpretation and application.

(2) In lieu of prohibited price redetermination, the selling producer and the purchasing pipeline should each have the right to require, at stated periods, that the deregulated price for a first sale of natural gas should be renegotiated by the parties. As so renegotiated, the new price would supplant the old. If, however, after a period for renegotiation, the parties have failed to agree upon a new price, the producer should have the right to solicit and receive offers for the purchase of the subject gas by other buyers, with the said purchasing pipeline having the right of first refusal to the gas at the price tendered to the producer in any such offer.

IV
RATE OF TAKE UNDER DEREGULATION

In the "sellers' market" which now exists, almost all new contracts for first sales of gas executed since enactment of NGPA require the pipeline to take or pay for a very high percentage of available gas. Required takes of 80% and 90% of daily deliverability are common; and, as time progresses, more and more recent contracts require purchasers to take or pay for 100% of deliverability. Producers exact these provisions to: secure speedy return of capital and maximum cash flow, protect acreage against drainage, and insure preference over takes by the pipeline from other sources.

Contractual requirements of this extreme nature are at war with valid principles of production and conservation, as well as the utility market which gives value to gas in the field. As they proliferate, they produce waste and inefficiency; and, through disruption of the market, they hold promise of bankrupting both pipelines and utility service.

While take-or-pay provisions had been injected into most supply contracts during the 1960's, the clauses then used were not so extreme; and, during the supply shortage of the 1970's--when the market needed every foot of gas which could be produced--the clauses were meaningless. Thus, when NGPA was considered in 1977 and 1978--a time when shortage still persisted--no consideration was given to the subject. Like price redetermination, this, too, was a sleeper. Then, following passage of NGPA, such clauses multiplied like wild fire and became far more stringent.

The situation is particularly acute in offshore areas of the Federal domain. There, for reasons which stem back to days of shortage (as well as the Federal government's desire for maximum royalties), the Interior Department has failed to impose normal operating limitations of the kind utilized by State governments onshore. In consequence, extremely high take requirements are imposed by producers in order to force total depletion of offshore gas in the shortest possible time, without regard for either physical conservation or proper utilization.

Viewed from the standpoint of the pipeline and retail utility market for which gas is produced, one can readily see that something is awry. User demands for gas vary dramatically from season to season and with the business and economic cycles. Furthermore, there is seldom any contractual obligation on the part of the retail user to take; and, usually, he can shift to other fuels at will. Meeting these varying demands in an assured manner presents problems of extreme difficulty and complexity; and overly-rigid take requirements can readily force the industry into an impossible box. If large markets are lost during a run-up of field prices in 1985, take requirements can bankrupt the industry. At very least, they will force wasteful dumping of surplus take requirements for boiler use.

Furthermore, it would appear that, when gas is not taken, payment of the contractual price for such high percentages of daily take will far exceed the cash needs of the producer for taxes and fixed costs. And the doctrine of preference inherent to these maximum take requirements is clearly at war with ratable production principles which lie at the base of State regulatory rules and which are typical of most crude oil operations.

Clearly, something must give! The public interest demands sound conservation, sound public service and sound operating principles. A producer's demand for maximum cash flow and preference cannot be the all-governing considerations. Ever since the Great Depression, Federal policy, as expressed in the Oil Compact Law and the Natural Gas Act, has supported reasonable limitations on production to insure conservation, proper marketing and protection of the public service.

To these ends, we believe that Congress must impose reasonable standards for take-or-pay clauses in both existing and future contracts.

Considering this need and viewing take requirements historically, we note that typical long term contracts, in earlier days, in major producing areas of the Gulf Coast and Southwest, required that reserves be agreed upon by the parties and that these reserves be produced at a steady rate over a 20-year contractual term--with the pipeline having some flexibility in taking above and below this contractual standard. This provided an efficient base for pipeline operations; good supply management was encouraged; and market variations could be accommodated without penalty.

As opposed to this, we also note the terrific escalation in the costs, size and time of exploration and development; and, in consequence, the producer's pressing needs for legitimate cash flow and reserve protection. In this light, producers have pressed for high deliverability takes.

The question before Congress, thus, becomes one of ascertaining a fair and reasonable balance between the historical long term model and the overbearing 100% deliverability requirement. The question, in short, becomes this: What will provide essential cash flow and reserve protection to the producer, while affording essential operating flexibility to the market for which gas is produced?

With this principle in mind, the following standards for take-or-pay clauses are recommended:

(1) Any take-or-pay requirements in producer-pipeline contracts should impose on the pipeline the burden of taking a daily figure no greater than that determined for long term contracts in the following manner:

  (a) the agreed-upon reserves dedicated to the contract divided by the number of days in the contractual term; or

  (b) that reasonable percentage of daily deliverability which is specified for the class of gas involved in the contract by rules issued, within twelve months after passage of the amendment, by an appropriate government agency selected by Congress.

(2) If, at any time, the pipeline fails to take this daily figure within the tolerances allowed by the contracts,

> and, therefore, pays for the same, it should have the firm right to take "make-up" quantities out of excess deliverability over a period of five years or the remaining term of the contract, whichever is shorter--with the producer required to guarantee such make-up in gas, or in return of cash if it fails to provide gas for such make-up deliveries.

Furthermore, the Interior Department should establish operating rules for offshore production similar to those used onshore by State Oil and Gas Production Departments--to the end that the take-or-pay requirements in the contracts of one pipeline will not cause preferences over takes from other producers generally. The normal rule under State regulation is that all producers will be treated ratably; and this concept should apply in the Federal domain.

The foregoing should provide both essential cash flow and reserve protection while affording essential operating flexibility to the interstate pipeline market. In this light, therefore, it is recommended that Title I of NGPA be supplemented with a new Subtitle D which establishes the standards set forth in subparagraphs (1) and (2) for both existing and new first sale contracts. At the same time, to protect against preferences and drainage, the Interior Department should move promptly to establish offshore production regulations and the Federal Energy Regulatory Commission should facilitate field exchanges and sales.

V

THE TIME SCHEDULE FOR DEREGULATION

Title I of NGPA is bottomed on the principle that deregulation of field prices must come in an orderly fashion over many years. Section 107 permits one relatively small category of "high cost" gas discovered since February of 1977 to be deregulated immediately. Other "new" discoveries since early 1977 are to be deregulated in 1985, with a schedule of regulated prices set for the interim. "Old" gas reservoirs from which gas was being drawn when the statute was enacted are to continue under regulation until exhaustion, gradually being replaced by new deregulated discoveries. Congress concluded, on the basis of economic projections made in 1978, that this would lead to an orderly and beneficial transition from total regulation to ultimate deregulation of all gas.

Most producers and many in government now contend that these concepts are wrong. They point to obvious factual miscalculations which lay at the base of the statute, the discriminations between producers having the same natural resource, the disparities between current drillings for oil and gas and the misallocation of such capital as is, in fact, devoted to gas exploration. They call for deregulation of all gas immediately or, at least, over relatively brief periods.

But, under the economic circumstances now in being, unlimited deregulation of all presently attached supplies would be catastrophic to utility service. Unlike the markets for heating oil and gasoline, gas utility service is heavily regulated at the local level; and major increases in costs of supply are tolerated by this important energy market with great difficulty. The monumental cost increases which would accompany sudden and complete deregulation of all attached supplies would lead to utter chaos in utility service and might well propel that service into bankruptcy. After all these years of regulation, the economic problems are so vast that, in the public interest, and as a matter of equity, sound means of ordering and controling the deregulatory process must be continued.

At the same time, however, the statute should be revised in one major respect, to wit: all new reservoirs discovered after the enactment of an amendment to NGPA should be deregulated immediately, so that this "new, new" gas may rise to sound market clearing prices. Confinement of immediate deregulation to Section 107 gas, alone, is discouraging exploration for gas in broader areas, as is evident from the statistics for gas and oil exploration. Furthermore, the $9 and $10 prices for deregulated Section 107 gas are outlandish--equivalent to $57 per barrel of crude oil--and result, in major part, from the smallness of the bloc of gas which can be priced on a deregulated basis.

If the present situation continues, the industry will come to the year 1985 with one small bloc of already-freed gas bearing prices far above true market clearing levels for large supplies of new gas. The problem of establishing an orderly market in 1985 and for some years thereafter will be momentous. And, as each producer seeks to redetermine deregulated prices pursuant to outstanding contracts, prices will be forced to an uneconomic plateau.

The sensible course surely lies in the immediate deregulation of all new reservoirs discovered after enactment of an amendment to NGPA, to the end that the price of these supplies may be allowed to reach true market clearing levels. This will immediately increase exploration for gas in all areas and, as is happening for oil, provide enlarged supplies of presently deregulated gas. In this manner, constantly increasing supplies of gas will be subjected to true price negotiation between producers and pipelines. A sounder free market value will exist in 1985. The revaluation of existing "new" gas deregulated in 1985 will be effected on a reasonable base. And, as further reserves come into the market after 1985, there will be an established negotiating environment based on a sizeable free market.

It is submitted that immediate deregulation of all reservoirs discovered after the date of amendment, as discussed previously, is essential to the smooth, orderly and non-disruptive transition of the gas industry to ultimate deregulation.

To this end, it is recommended that Section 121 in Subtitle B of Title I of NGPA be amended to deregulate Section 102(c) gas consistent with the above suggestions.

VI

PIPELINE RATE DESIGN CHANGES ESSENTIAL TO DEREGULATION

In the unregulated oil business, the demand/price situation of the ultimate market directly affects prices paid for crude oil in the field. One readily sees this in the fluctuating posted prices for crude oil in the field, and even in the prices which can be exacted by the OPEC cartel. When demand for oil products falls, downward pressure is placed on prices for crude.

For valid free market principles to exist in the natural gas industry, this same effective transmission of pricing signals must occur. Field prices must feel and reflect the pricing limits of utility service. As with other natural resources, values in the field of production must rise and fall with the demand/price situation of the ultimate users. But current pipeline rate designs, developed in an era of regulated field prices, do not satisfy these needs of a free market.

Except to the limited extent envisioned by Title II, this, again, is a problem which was not addressed and solved when NGPA was enacted. And, within both government and industry, there is now much discussion of the need for clear "market signals" running back from utility service to producer and of the fact that this essential market signal will not be provided under existing institutional arrangements.

Upon extensive analysis, we believe this frustrating situation results, in largest measure, from existing pipelines' rate designs. These designs have long been in use and came into being when field costs were low and market signals were of no moment. And their force and effect is to lump costs of gas in the field with transmission, storage and other costs of operating facilities in ways which prevent utility service from reacting directly to material increases or decreases in average field supply costs. In consequence, neither the producer nor the pipeline can accurately appraise what the market clearing price may be and, hence, what the utility market can and will pay. The potential tragedy is that, in their natural desire to get all the "traffic will bear", producers will exact, and pipelines will pay, prices which they think can be flowed-through but which will, in fact, work havoc on utility service.

We believe that effective transmission of utility market signals will more readily occur and that, in consequence, a sounder resource market will develop, if: (1) all costs paid for gas in the field are isolated from costs associated with the physical operation of pipeline systems from well through to points of sale to utility service (no matter how many pipelines operate, in tandem, in transmitting the gas); and (2) all such isolated supply costs are recovered through separate commodity rates--again, from pipeline to pipeline until ultimate sales to retail distribution utilities. In this way, varying field costs would be reflected in one clear commodity type rate; while the much more stable costs of operating transmission, storage and other physical facilities would be reflected in another rate or rates. Variations in retail utility purchases under the commodity rate for supply would clearly illuminate the affect of changes in field prices; and resultant changes in volume of take under the separate commodity rate would exert telling pressure upon pricing relationships between producer and pipeline.

With the foregoing in mind, we suggest that the rate designs utilized by pipelines under the Natural Gas Act be modified in the following manner:

(1) Prices paid for gas in the field--together with allowances for the pipeline's own production, compressor fuel and the costs of supplemental supplies, i.e., LNG and SNG--would be isolated from all other costs of the pipeline for recovery through a separate commodity rate (it being recognized that, in some cases, it may be necessary to recover the costs of supplemental gas facilities, such as LNG terminals and SNG plants, in other rates). This separate commodity rate would be carried through from pipeline to pipeline, with each successive downstream pipeline rolling-in its own similar costs, to the points of ultimate sale to distribution utilities. As seen by utility service, this would be a separate commodity rate for costs of gas in the field and supplemental non-natural-gas company supplies.

(2) The above described, separate commodity rate for field and supplemental supplies would bear a reduced minimum bill, set at a level which utility service could meet

without penalty. Under this rate, therefore, utility service would only be forced to pay for those supplies which it, in fact, needed to satisfy consumer demands. Thus, if field cost increases force utility customers to reduce their demands, takes under this rate would decline accordingly. If field costs were such that demands were encouraged, takes under the commodity rate would increase. There would, thus, be direct communication between market and field, a process critical to any sound free market for resources.

(3) All non-gas costs (i.e., transmission costs, etc., including return) would be covered by other rates. Wherever pipelines operate in tandem, the rates paid by a downstream pipeline to an upstream pipeline for such non-gas costs would be aggregated by the downstream pipeline with its own non-gas costs in arriving at its own rate or rates for non-gas costs. Such rates would necessarily be designed for each pipeline in light of its operations and the characteristics of its markets; and they might be demand alone or demand and commodity, depending on the circumstances. Whatever the design, however, the end result should protect pipeline costs, while lending full encouragement to sound supply planning, improved management of supply and satisfaction of utility service entitlements and requirements.

There is no intent in the foregoing proposal to place pipelines in a squeeze between producer and utility service. At the same time, however, this new design would bear directly on each pipeline's contractual arrangements for field and other supplies, and necessitate future adjustments and changes, keying the take requirements under those arrangements to lower minimums required of utility service. The alteration in approach would require improved market analyses and careful studies of the demand/price tolerances of utility service. But, in any free market economy, these characteristics of the ultimate market must determine what the middleman can afford to pay and the takes which he can guarantee.

To these ends, it is recommended that NGPA be supplemented with a new provision requiring that the Federal Energy Regulatory Commission shall, not later than 12 months after date of enactment, prescribe and make effective (and may, from time to time, amend) a rule designed to provide that the rates and charges of every natural-gas company under Sections 4 and 5 of the Natural Gas Act shall, among other elements, reflect the principles set forth in paragraphs (1) and (2) and the separation of rates contemplated by paragraphs (1) and (3) above.

Appendix A

MEMBERS OF UNITED DISTRIBUTION COMPANIES

Company	State of Operation	Principal City Served
ASSOCIATED NATURAL GAS CO.	Arkansas	Blytheville
BATTLE CREEK GAS CO.	Michigan	Battle Creek
CENTRAL ILLINOIS LIGHT CO.	Illinois	Peoria
CENTRAL ILLINOIS PUBLIC SERVICE CO.	Illinois	Springfield
CITIZENS GAS & COKE UTILITY	Indiana	Indianapolis
CITIZENS GAS FUEL CO.	Michigan	Adrian
CONSOLIDATED GAS SUPPLY CORP.	West Virginia	Clarksburg
CONSUMERS POWER CO.	Michigan	Jackson
THE DAYTON POWER & LIGHT CO.	Ohio	Dayton
EAST OHIO GAS CO.	Ohio	Cleveland
EQUITABLE GAS CO.	Pennsylvania	Pittsburgh
ILLINOIS POWER CO.	Illinois	Decatur
INDIANA GAS CO.	Indiana	Indianapolis
KOKOMO GAS & FUEL CO.	Indiana	Kokomo
MICHIGAN CONSOLIDATED GAS CO.	Michigan	Detroit
MICHIGAN GAS UTILITIES CO.	Michigan	Monroe
MISSOURI UTILITIES CO.	Missouri	Columbia
NATIONAL FUEL DISTRIBUTION CORP.	New York	Buffalo
NIAGARA MOHAWK POWER CORP.	New York	Syracuse
NORTH SHORE GAS CO.	Illinois	Chicago
OHIO GAS CO.	Ohio	Bryan
ORANGE & ROCKLAND UTILITIES, INC.	New York	Spring Valley
THE PEOPLES GAS LIGHT & COKE CO.	Illinois	Chicago
PEOPLES NATURAL GAS CO.	Pennsylvania	Pittsburgh
RICHMOND GAS CORP.	Indiana	Richmond
RIVER GAS CO.	Ohio	Marietta
ROCHESTER GAS & ELECTRIC CORP.	New York	Rochester
THE TOLEDO EDISON CO.	Ohio	Toledo
WEST OHIO GAS CO.	Ohio	Lima
WISCONSIN GAS CO.	Wisconsin	Milwaukee

Senator NICKLES. Thank you, Mr. Cooper. Dr. Cooper?

STATEMENT OF DR. MARK COOPER, DIRECTOR OF RESEARCH, CONSUMER ENERGY COUNCIL OF AMERICA

Dr. MARK COOPER. My name is Mark Cooper, and I am director of research of the Consumer Energy Council of America which is a broad-based coalition of major national consumer, labor, farm, public power, rural electric cooperative, senior citizen, urban, and low-income organizations.

I appreciate the opportunity to testify today, and in addition to my statement, I have submitted three recent reports that we have prepared on energy prices which I would hope would be included in the record.

In considering natural gas pricing policy, there are really three analyses that must be prepared—an energy sector analysis, a general or macroeconomic analysis, and an equity analysis. NGPA clearly represents a laboriously arrived at compromise between the demand of the energy sector and equity concerns.

However, the testimony that I have heard in the past few days and months concentrates almost exclusively on energy analysis, and well it might, since it has been dominated by industry representatives and Federal energy administrators, but Congress must consider and balance energy economics and equities. We believe that natural gas decontrol should be rejected on all three grounds.

In the energy sector, Congress is certain to continue to hear, as you have heard in the past 2 days, conflicting testimony provided by different segments of the industry about how the natural gas market is working. In the final analysis, however, I think you will arrive at the conclusion that on the demand side, as the distribution segment of the industry suggested, the market is working well.

On the supply side, you will find that drilling is up as are reserves. Both the distribution side and part of the production side have testified to that.

You may find potential problems on the supply side, problems which stem from ineffective implementation by the Federal Energy Regulatory Commission and the irrepressible urge of industry to increase its profits. There are only potential problems, problems which may not in fact exist. There are problems created by the supply side of the market, not Congress or consumers, and decontrol asks consumers to pay the price of a solution to a problem that is not of their making.

Keeping in mind that FERC has more power to deal with these problems within the structure of the law that Congress has written than it has to conduct its raid on old gas and near-deep gas prices, we believe you will find that there is little reason to undo NGPA. However, the point I would like to stress today above all else is that even if decontrol were to have every one of the potential salutory effects within the energy sector about which you have heard, Congress could still reject decontrol. It could do so because the loss in nonenergy sectors of the economy due to rising energy prices would far outweigh the gains in the energy sector.

In one of our reports we submited to you today, we maintain that the losses are massive and dominant. That report documents the fact that the central economic problem of the 1970's was an energy price problem. Although it has become popular of late to look back at the decade of the 1970's and declare that it expressed the failure of half a century of progressive economic policies, in fact if one analyzes the decade with any objectivity, one must conclude that one and primarily one policy failed—energy price policy—and here my conclusions are based on the analysis provided by the Department of Energy, the Reagan Department of Energy in support of National Energy Plan III. Remove energy price increases and you remove fully one-half, perhaps two-thirds, of the economy's slowdown of the decade.

Remove energy price increases and there is almost no recession in 1974, and none in 1979-80. There is no double-digit inflation at any time in the decade. There are on average 2 million more Americans at work in every year in the decade, and there is no depression in automobiles or housing.

We have recognized this critical link between energy and the economy for years. Others have recently discovered it. To cite the opening sentence of the cover story of the March 22, 1982 edition of Business Week, "For almost a decade the rising price of OPEC oil has gripped the world economy in a vise. Reeling from the twelvefold price increase from 1973 to 1981, the industrial nations, nurtured on more than a century of cheap energy, not only went plummeting into two recessions, but also suffered further as inflation rates soared to record levels." We welcome the recent converts to our point of view. As we stated long ago in the 1970's, the economy was not collapsing. Rather energy prices were crushing it.

Moreover, we point out that most of the increase in the energy bill was paid to domestic, not foreign producers. We did it to ourselves, and if we decontrol natural gas, we will do it to ourselves again, but let us go one step further in making the point I would like to stress today regarding the balanced view that Congress must take.

Even if the Congress finds that the economic impact of decontrol would be positive in the aggregate, it could still reject decontrol. Congress could do so because it found that the equity losses due to decontrol are larger than the efficiencies or economic gains of decontrol. We believe Congress will find that so few people benefit from decontrol, so much wealth is redistributed from low- and middle-income Americans to the rich through decontrol, and the burden placed on the poor by decontrol is so great that basic concerns for social equity override.

Again, the Department of Energy analyses point, and we point out in their own analysis, that the transfer of resources to the gas industry will be two to three times larger than any potential increase in the gross national product, and the difference will be made up through losses in the income of labor and nongas related capital.

[The prepared statement of Mark Cooper follows:]

Testimony of

Dr. Mark Cooper
Director of Research

Consumer Energy Council of America

Mr. Chairman and Members of the Subcommittee:

Good morning. My name is Dr. Mark Cooper, and I am Director of Research for the Consumer Energy Council of America (CECA). CECA is a broad-based coalition of major national consumer, labor, farm, public power, rural electric cooperative, senior citizen, urban, and low income organizations (see attached list).

I appreciate the opportunity to testify before the Committee today to give our views generally, on natural gas policy and specifically, on the implementation and functioning of the Natural Gas Policy Act (NGPA). Since these hearings deal with the general topic of natural gas pricing and the natural gas market, in all of its many complexities, and the time allotted to addressing these issues is very short, I would like to mention briefly a large number of points, all of which have been copiously documented over the past few months in a series of reports prepared by the Consumer Energy Council of America, and to place these points in a broader context.

In considering natural gas pricing policy, there are really three analyses that must be prepared -- an energy sector analysis, a general or macroeconomic analysis and an equity analysis. The NGPA clearly bears the stamp of two of these. It is a laboriously arrived at compromise between the demands of the energy sector and equity concerns.

However, the testimony that you have heard today -- and most of the testimony over the past few months -- concentrates almost exclusively on the energy analysis. Well it might, since it has been dominated by industry representatives and federal energy administrators, all of whom have specific interests and concerns restricted largely to the energy sector and most of whom would like to undo the compromise between energy and equity embodied in NGPA. Congress, however, must consider energy and economics and equity and it must balance all three considerations. We believe that natural gas decontrol should be rejected on all three grounds.

The analysis in which that conclusion may be most difficult to reach is the energy sector analysis. You are certain to continue to hear, as you have heard in the past two days, conflicting testimony provided by different segments of the industry about how the natural gas market is working. You are also likely to encounter some potential problems in the energy sector associated with NGPA. It would appear that there are plusses and minusses to accelerated decontrol.

The final analysis, however, should lead you to conclude that even within the energy sector, there is little justification for changing NGPA. Careful analysis shows that NGPA has worked quite well on the demand-side of the natural gas market. There have been few if any curtailments and there has been a strong, effective conservation response to NGPA by consumers.

On the supply side, you will find that drilling is up, as are reserve additions. You will find that the distribution of gas between intra and interstate pipelines has balanced out since the early days of NGPA.

You may find potential problems on the supply-side -- problems which stem from ineffective implementation by the Federal Energy Regulatory Commission (FERC) and the irrepressible urge of industry to increase its profits. The ingenuity of industry and its regulators in creating these potential problems is well reflected in the terminology they have sanctified. We hear about "cushions," "gaps," "spikes," "escalators" and "most favored nation clauses." Remember that they are only potential problems, problems that may not in fact exist. Remember that they are problems created by the supply-side of the market, not Congress or consumers, and decontrol asks consumers to pay the price of a solution to a problem that is not of their making.

Remember that FERC has more power to deal with these problems within the structure of the law Congress has written than it has to conduct its adventurist raids on old gas and near deep gas prices. Remember that the arguments put forward by the supporters of decontrol have a perverse illogic to them. In essence, their argument goes like this: "We on the supply-side of the industry (regulators included) have found ways to thwart Congressional intent and there is no way you can prevent us from continuing to do so, therefore Congress must capitulate and give us complete decontrol."

We, on the other hand, believe you will find the energy sector problems to be small, and that the indicated solution is not accelerated and expanded decontrol and that you will, therefore, find little reason to undo the NGPA. These points have been laid out in greater detail in our earlier testimony before this Committee. Having listened to and participated in the last six months of debate, we are even more convinced than ever that our conclusion is sound. Even the energy sector analysis gives little support to reopening NGPA at this time.

However, the point that I would like to stress today above all else is that even if decontrol were to have every one of the salutory effects within the energy sector about which you have heard testimonials in the past two days, Congress could still reject decontrol. It could do so because the losses in the non-energy sectors of the economy due to rising energy prices would far outweigh any gains in the energy sector.

We believe that the evidence suggesting that those losses will be massive and dominant is compelling and we have documented these in a report which we have released today and submit, with your permission, for inclusion in the record. That report, entitled The Past as Prologue II: The Economic Impact of Rising Energy Prices, documents the fact that the central economic problem of the 1970s was an energy price problem. The report shows that, although it has become popular, of late, to look back at the decade of the 1970s and declare that the decade expressed the failure of half a century of progressive economic policies, in fact, if one analyzes the decade with any objectivity, one must conclude that one and primarily one policy failed -- energy price policy. Here are the facts, documented in our study:

1. Remove energy price increases and you remove fully half and perhaps two-thirds of the economic slowdown of the decade.
2. Remove energy price increases and there is almost no recession in 1974 and none in 1979-80.
3. Remove energy price increases and there is no double digit inflation at any time in the decade.
4. Remove energy price increases and, on average, two million more Americas are at work in every year in the decade.
5. Remove energy price increases and there is no depression in housing or automobiles.

We have recognized this critical link between energy and the economy for years. Others have only recently discovered it. If I may quote the opening sentence of the cover story of the March 22, 1982 edition of Business Week:

> For almost a decade the rising price of OPEC oil has gripped the world economy in a vise. Reeling from the twelvefold price increase from 1973 to 1981, the industrial nations -- nurtured on more than a century of cheap energy -- not only went plummeting into two recessions but also suffered further as inflation rates soared to record levels. Now, with oil prices falling faster than anyone expected and with the cartel's grip loosening, the process of economic stagnation is being reversed.

Although many in the media seemed to have waited until the devastating rise in energy prices moderated a bit to discover that energy prices have an awesome impact on the economy, we understood this connection all along. We welcome the recent converts and reiterate our view, stated years ago, that in the 1970s, the economy was not collapsing, rather energy prices were crushing it.

Moreover, we point out that, as a recent report released by the Joint Economic Committee, a report which the CECA Research Foundation helped prepare, shows, most of the increase in the energy bill was paid to domestic, not foreign, producers. We did it to ourselves. And, our studies show, if we decontrol natural gas, we will do it to ourselves again.

From the point of view of the economy, the nation made a terrible mistake in the oil price decontrol decision. Accelerated natural gas decontrol would be a mistake of similar magnitude. With little or no benefits -- in GNP or in increased gas supplies -- the nation would suffer added inflationary pressure, an increase in the already abysmal unemployment rate, productivity losses, and a weakened international trade position. Clearly, this is too high a price to pay for zero return.

But let us go one step further in making the point I would like to stress today regarding the balanced view that Congress must take. Even if the Congress finds that the economic impact of decontrol would be positive in the aggregate, it could still reject decontrol. Congress could do so because it found that the equity losses due to decontrol are larger than the efficiency or economic gains of decontrol. Congress might find -- indeed, we believe it will find, as we have found and have documented in an earlier report entitled Natural Gas Price Decontrol: A Case of Trickle Up Economics -- that so few people benefit from decontrol, so much wealth is redistributed from low and middle income Americans to the rich through decontrol, and the burden placed on poor households by decontrol is so great that concerns for basic social equity -- concerns to which neither the industry nor FERC have any real commitment -- dictate that Congress must move with the utmost caution.

Our examination of the equity issue, which is based entirely on the Department of Energy's extremely optimistic economic analyses, points out that the increase in income enjoyed by the owners of gas related capital -- the gas industry -- will be two to three times as large as any increase in gross national product. That means that while the gas industry enjoys an increase in income of between $95 to $122 billion (constant 1980 dollars), labor suffers a loss in income of $35 to $53 billion and owners of of non-gas industry stock suffer a loss in income of $21 to $28 billion. In other words, for every dollar of income that the gas industry gains, labor loses 50 cents and owners of non-gas related income lose 25 cents.

These are income transfers of staggering proportions and notwithstanding the protestations of the industry spokespersons that pension funds and low and middle income people own stocks, or that small royalty owners benefit from decontrol, there is absolutely no doubt that only a very small group of wealthy Americans who own a lot of gas industry stock will be better off as a result of decontrol. It is bad equity policy -- at a moment when the equitable distribution of wealth and welfare in our society is being dangerously skewed by many other policies.

Thus, we welcome the Committee's careful analysis of these issues over the next few months because we are confident that you will reach the same conclusion as we have. Simply put, expanded or accelerated decontrol in any form is not justified on energy or economic or equity grounds.

Moreover, we urge you to insist that FERC analyze the basis for and implications of its actions far more carefully in the future than it has in the past. Congress must not permit FERC -- whose narrow perspective is unacceptable for fundamental policy decisionmaking -- to usurp Congressional responsibility by overstepping the bounds of NGPA.

Again, on behalf of CECA, I thank the Committee for the opportunity to testify today. I would be pleased to answer any questions that you may have.

CONSUMER ENERGY COUNCIL OF AMERICA

MEMBER ORGANIZATIONS

Adams Electric Cooperative, Inc.
AFL-CIO
Allegheny Electric Cooperative, Inc.
Amalgamated Clothing & Textile Workers Union, AFL-CIO
American Federation of State, County & Municipal Employees, AFL-CIO
American Federation of Teachers, AFL-CIO
American Public Power Association
Association of Illinois Electric Cooperatives
Association of Texas Electric Cooperatives Inc.
Basin Electric Power Cooperative
Central Power Electric Cooperative, Inc.
Citizen/Labor Energy Coalition
Consumer Federation of America
Cooperative League of the USA
East River Electric Power Cooperative, Inc.
Florida Electric Cooperatives Association
Hoosier Energy Division, Indiana Statewide Rural Electric Cooperative
Industrial Union Department, AFL-CIO
International Association of Machinists and Aerospace Workers, AFL-CIO
International Molders and Allied Workers Union, AFL-CIO
Kansas Electric Cooperatives, Inc.
Kansas Municipal Utilities
Lincoln (Nebraska) Electric System
Marine Engineers Beneficial Association
Maritime Trades Department, AFL-CIO
Minnesota Farmers Union
National Community Action Agency Executive Directors Association
National Council of Senior Citizens
National Farmers Organization
National Farmers Union
National Rural Electric Cooperative Association
North Carolina Electric Membership Corporation
North Dakota Farmers Union
Northeast Missouri Electric Power Cooperative
Northeast Public Power Association
Northwest Iowa Power Cooperative
Northwest Public Power Association
Oil, Chemical and Atomic Workers International Union, AFL-CIO
Pennsylvania Rural Electric Association
Rocky Mountain Farmers Union
Service Employees International Union, AFL-CIO
South Dakota Farmers Union
Southside Electric Cooperative Inc.
Tennessee Valley Public Power Association
Texas AFL-CIO
United Auto Workers
United States Conference of Mayors
United Steelworkers of America, AFL-CIO
Washington Public Utility Districts' Association
Washington State Labor Council, AFL-CIO
Wisconsin State AFL-CIO

Senator Nickles. Thank you very much, Dr. Cooper. Mr. Rothschild?

STATEMENT OF EDWIN ROTHSCHILD, DIRECTOR, ENERGY ACTION PROJECT, CITIZEN LABOR ENERGY COALITION

Mr. Rothschild. Thank you, Mr. Chairman. I am here representing the Citizen Labor Energy Coalition, and I want to first support Mr. Cooper's very good and strong statement on the issue, and would just like to have my entire testimony submitted for the record. There are some additions that I have included as well.

I would like to say that I think we ought to understand natural gas in a much broader context, namely, in the context of the price of oil.

Right now, the price of oil is falling. It is falling because it went much too high. It was artificially high. It was driven high by anticompetitive forces in the world marketplace, and because it went to such a high price, created a recession in Europe, the United States, and other parts of the world so that consumption is rapidly falling.

This decline in the price of oil ought to be welcomed. There should be no talk of putting an oil import fee on oil imported into the United States because that would just continue to exacerbate the problems we have been facing of recession and inflation. On top of that, what we are facing with the Natural Gas Policy Act and the fact that Congress rejected President Reagan's offer to send up legislation, President Reagan then decided to go through the back door, through the Federal Energy Regulatory Commission. This Commission is attempting to administratively raise the price of natural gas and protect producers in the natural gas marketplace.

Oil prices are falling. Natural gas prices are rising under the current market. We think that the effort by the Federal Energy Regulatory Administration to administratively decontrol prices ought to be stopped. It is a violation of the intent of Congress in the Natural Gas Policy Act which set a framework for natural gas pricing which this Commission is trying to undermine through various proceedings, under so-called high cost, high risk gas, tight sands, deep water, and the proposal of 10,000 to 15,000 feet. On top of that, the Commission is contemplating raising the price of old gas to very substantial levels. If this occurs and if all these backdoor decontrol proposals go into effect, consumers could be tagged with another $50 to $100 billion over the next 3 years.

What should happen at the FERC is some concern for the consumers which has not happened over the last few years, including the previous Commission, so just to summarize, Mr. Chairman, we urge Congress to take a close look at what the FERC is doing in its efforts to administratively deregulate the price of gas through various rulemakings and proceedings.

Thank you.

[The prepared statement of Mr. Rothschild follows:]

TESTIMONY
of
Edwin Rothschild
Director
Energy Action Project
CITIZEN/LABOR ENERGY COALITION

Mr. Chairman and members of the Committee. We appreciate very much the opportunity to appear before you today to testify on one of the major energy issues facing the nation -- the administrative deregulation of natural gas prices. Based upon recent actions taken by the Federal Energy Regulatory Commission and public statements of the Commission's Chairman, Mr. Charles M. Butler III, it is clear that the Administration has altered its course from seeking decontrol legislation in Congress to achieving it by administrative fiat.

President Reagan announced his decision not to introduce legislation to accelerate natural gas decontrol on March 1. At the same time, however, he reaffirmed his commitment to the goals of deregulation. To carry out these goals, the FERC has begun a systematic campaign to undermine the provisions of the Natural Gas Policy Act of 1978 and to increase natural gas prices to "market clearing levels" by 1985. We believe that the actions of the FERC and its Chairman, Mr. Butler violate the intent of Congress and are contrary to the public interest.

In 1978 Congress on the one hand agreed to increase prices for natural gas to provide producers with additional "incentives," but, on the other hand, also agreed that consumers should be protected. Ever since the Commission began to implement the NGPA, consumers have been treated with contempt and their views rejected.

How can consumers obtain a fair hearing for their views at the FERC when its Chairman believes that consumers "have never really understood the issues or at least acknowledged the economic problems associated with regulation of commodity pricing," or when he tells The Washington Post that "the consumer obtains no benefit from continuing price controls."

How can citizens expect the FERC under Mr. Butler to carry out the intent of the NGPA, when he has repeatedly stated that gas prices must be accelerated? On January 6, 1982 Mr. Butler wrote in The Cleveland Plain Dealer:

> All gas categories should be phased up to a target market clearing level by January 1, 1985. On that date, all regulation of natural gas prices should be terminated.

He also stated on WDVM-TV that the FERC proposes "to phase in" price increases for natural gas between now and 1985 using the excuse "so that it just doesn't hit (consumers) all in the face at one time." Of course, Mr. Butler, like other decontrol advocates, neglects to mention the extraordinary high cost of this "phase-in." Depending on how successful Mr. Butler and the Commission are in their backdoor decontrol efforts, consumers could be charged between $50 and $100 billion more over the next three years.

This increase comes on top of the substantial price increases that have already occured under the NGPA itself. Since 1977 the average wellhead price of natural gas has increased by 132%, an average of 23% per year over the last four years. Over the same period the average price to residential users climbed by 102%, or over 19% per year. Inflation grew at a much slower rate. Over the four year period the Consumer Price Index grew by 50%. While higher natural gas bills under the NGPA have been taking more and more money out of the average earnings of moderate and lower-income familes, a worker's average weekly pay grew by a mere 35% between 1977 and 1981. In other words, Mr. Chairman, consumers have already paid a very high price.

The prices allowed producers under the NGPA are already more than generous. Drilling has increased. And there is so much gas available that production in many parts of the country is being shut-in. Accelerating prices even further will not mean additional production, but rather more inflation and more recession. Accelerating prices even further will not necessarily increase drilling, because, unlike oil, very little natural gas is imported. Accelerating prices will only increase imports of foreign oil. The Journal of Commerce reported on March 12, 1982 that industrial users in certain parts of the country are now shifting from natural gas to residual fuel oil, because the price of gas exceeds the price of fuel oil. This report also noted that "the volume of gas produced is going to be set by the market, not by supply." In other words, it is demand for natural gas that will stimulate gas production, not a higher price. And, in fact, a higher price might discourage production, because users are shifting to competing fuels.

Such switches by industrial users are resulting in shifting more of the cost of rising gas prices to residential consumers. According to Energy User News (March 22, 1982),

> Southern California Gas Co. here has broken with tradition by requesting a rate hike that places almost twice the burden on residential customers than it does on commercial and industrial users. The move is designed to keep large users from switching to residual oil which is now nearing the cost of natural gas...

Unlike industrial users, residential customers have little or no opportunity to switch fuels. At best, all that residential users can do is reduce consumption, something which many have already done. In short, at a time when oil prices are falling, gas consumers are faced with the prospect that the NGPA will be used by the FERC to raise gas prices for producers to levels much higher than the current law provides.

The NGPA, which was passed over the opposition of consumer organizations, is supposed to maintain controls on natural gas discovered before 1977 ("old" gas), and to allow an increase in price at or above the rate of inflation for natural gas discovered after 1977 ("new" gas). To stimulate additional investment in exploration and production from certain "more costly" categories of natural gas, Congress decontrolled the price of gas produced from geopressurized zones, coal seams, Devonian shale and so-called "deep gas" (below 15,000 feet). Congress also allowed the Commission some discretion in allowing higher prices for certain categories of gas that could be shown to be "high cost and high risk."

The Commission, instead of carrying out Congress's gas pricing framework, has subverted it. For example, the Commission has a duty to prevent "fraud, abuse or similar grounds" in the passthrough of pipelines' purchased gas costs. In its February 4 Policy Statement the Commission interpreted the fraud statement to cover pipeline practices amounting to "misrepresentation of any kind." This extremely narrow construction of a provision that was intended to limit irresponsibility in the purchase of natural gas has brought both industrial and residential consumers together in opposition to the Commission's position. When pipelines are leaving in ground lower priced gas supplies while at the same time contracting for new gas supplies at up to $10 per Mcf, many consumers agree that such action is an abuse of a regulated pipeline's "fundamental duty to provide adequate gas service at the lowest reasonable cost."

Of course, FERC Chairman Butler accused consumers who were trying to stop such pipeline abuse of engaging in a "witch hunt." What Mr. Butler's "Policy Statement" has done is to in effect tell every pipeline not to worry about what it pays a producer for decontrolled gas, that no matter what the price, consumers are not being abused. How the Commission can state, on the one hand, that a market clearing price for natural gas is determined essentially by the price of alternative fuel -- primarily No. 6 fuel oil -- but, on the other hand, permit pipelines to pay prices that are above "market clearing levels" is beyond our comprehension. What is not beyond our comprehension is the fact the Commission's policy statement takes administrative decontrol one step further.

The Commission's efforts to subvert the Natural Gas Policy Act also extend to selecting arbitrary criteria to allow producers to obtain "decontrolled" or "quasi-decontrolled" prices for more and more volumes of "new" gas. In August 1980, the FERC allowed producers of gas from geologic formations defined as "tight sands" to charge a price equal to 200% of the price allowed for Section 103 gas. Since that decision was handed down, the FERC, with minimal oversight and investigation, has classified over 70 areas across the nation as "tight sand" formations. For every billion cubic feet of production, consumers have been forced to pay an additional $2 million. The Commission, however, does not seem to have any idea how much of this gas is now being produced; how much is being produced that would not have been produced anyway; and how much drilling effort has been shifted away from lower-priced, but equally (if not more) productive natural gas.

From what we have been able to learn, a number of producing companies have indeed shifted their drilling efforts from wells that would be classified under lower-priced NGPA categories to "tight-sand"wells. "Tight sand" formations generally produce less natural gas than other formations. As a result consumers are cheated in two ways: 1) they are paying a substantially higher price and 2) they are receiving less gas. Thus, the incentives created by the Commission for the exploration for and production of "tight gas," have become perverse, a situation the Commission itself said it wanted to avoid when it promulgated Order No. 99.

The Commission stated:

> In establishing prices for high-cost gas, the Commission must be sensitive not to undermine Congress's overall pricing scheme. Section 107(c)(5) prices must not create perverse incentives but must be in harmony with the overall Congressional scheme.

Despite this reasonable view, the Commission, before issuing Order No. 99, did not prepare a study or obtain information or conduct cross-examination to determine whether the consumer dollars it was giving away would indeed create "perverse incentives." Moreover, even after issuing more than 70 orders designating "tight sand" areas, the Commission has never once stopped to analyze or consider whether in declaring so much gas to be from tight formations, perverse incentives have resulted.

In late December, the Commission, again without study, investigation or cross-examination, decided to allow natural gas produced from wells in water depths greater than 300 feet to receive a price 200% of the Section 103 price. The Public Utility Commission of California told FERC,

> It could not be clearer that there is little equity in establishing an incentive price which exceeds the price which would prevail in the absence of regulation under existing contracts.

Here again, it is clear that the Commission is undermining the pricing scheme devised by Congress and is creating new categories of decontrolled gas.

In another attempt to decontrol through the "backdoor," the Commission on December 30, 1981 published a proposal to allow a special incentive price for so-called "high-cost" gas produced from wells drilled to depths between 10,000 to 15,000 feet. Based on virtually no empirical information and predominantly on the inadequate, unsubstantiated, self-serving comments from 40 or so gas producers, the Commission announced that it had sufficient information to support a proposal to raise the price for gas produced from these depths to 150% of the Section 103 price.

Nowhere in the Commission's proposed rulemaking is there any indication or hint of the kind of procedure or set of criteria that will protect the consuming public against excessive prices or unnecessary price increases. The Commission has taken the language of the House-Senate Conference Report on the NGPA to claim that Congress indicated the Commission could set a higher price for gas produced from "intermediate" depths. Congress, however, simply stated that some wells "close to" 15,000 feet might have costs greater than normal. For the Commission to expand "close to" to depths as shallow as 10,000 feet defies logic. And why stop there? Certainly, the Commission could also argue that wells drilled to depths between 7500 and 10,000 feet incur costs that exceed the costs of shallower wells. And certainly, drilling to depths between 5000 feet and 7500 feet are more costly than wells drilled between 2500 and 5000 feet. Since the Commission has failed to collect information on reserves, finding rates, productivity and unit costs, it does not have the most important information with which to analyze the impact its proposal might have on drilling rates, on production, on consumer impacts and on other factors. Since there is already a glut of gas supplies with numerous producing wells shut-in for want of a market, it is only reasonable that producers want the highest price possible for gas they are going to produce anyway under the current law, which is precisely why the Commission's proposal has been so well received among producing companies.

What all of these "new" gas proposals have done is to create expectations on the part of gas producers that the Commission is going to allow deregulated prices (or "above market-clearing prices") for most forms of new gas drilling. As a result producers will not make decisions based on the prices that can be obtained under the congressionally-set NGPA categories, but rather on what new higher priced category they believe they can convince a pro-producer Commission to accept and ratify.

If the Commission permits gas from wells drilled to 10,000 to 15,000 feet depths to be priced at 150% of the Section 103 price, then we have estimated consumers could be charged an additional $6 to $9 billion more than under current law between 1982 and 1984. If the Commission agrees to raise the price to 200% of the Section 103 price (as it did for "tight sands," and "deep water"), then the cost to consumers could increase to between $11 and $18 billion. As part of our testimony we have included our analysis of the impact of these pricing decisions.

What FERC has done by promulgating these above-mentioned rulemakings and policy statement is to destabilize the domestic natural gas market, or in Mr. Butler's phrase, to disorder the market. By destabilizing the market through the creation of "perverse incentives" for new gas production and the refusal to cite interstate pipelines for "abuse" in the purchase of decontrolled gas at above market-clearing levels, the Commission has destroyed the "harmony" of the Congressional pricing scheme. Having established pricing anarchy, the Commission is now considering a method to eliminate the "market disorder."

According to Mr. Butler's advisers the ceiling prices on "old" natural gas are responsible for the disorder and so the solution, according to these clairvoyants, is to rid the market of "old" gas. The outline for this proposal is contained in a memorandum that was sent to Chairman Butler by Mr. Philip Marston, the Assistant Director of the Office of Regulatory Analysis. Marston told the Chairman that the Commission could not only eliminate the concept of vintaging (the various price ceilings on old gas), but also increase the highest ceiling price as long as the price met the "just and reasonable" standard of the Natural Gas Act. The FERC's ability to essentially do away with the regulation of old gas ceiling prices is coming under heavy scrutiny by consumers and others. While it is not certain as to whether or not the Commission is going to propose driving up the price of old gas, we nevertheless have estimated the cost using a reasonable range for the price the Commission might establish. The increased cost to consumers could range between $21 and $48 billion from 1982 to 1984. Our entire analysis is included as an appendix to this testimony.

The cost increases for the "tight sand," "deep water," and potentially for "intermediate deep" and "old" gas come on top of the increases that were allowed by Congress in the NGPA. Mr. Butler is intent on accelerating prices through administrative decision-making. These administrative actions usurp the power of Congress. Congress did not pass the NGPA and did not fight off Mr. Reagan's decontrol efforts to allow the FERC to accomplish accelerated decontrol through the "backdoor."

Congress designed the NGPA with the clear intention that old gas would be controlled and would be available to moderate gas prices increases to consumers. Congress also understood that if there were any market disorder problems, it would examine the market prior to the NGPA's expiration and determine whether or not controls should be extended for 18 months. It was not the Congress's intent to turn over plenary power to a regulatory agency to make such a determination.

We do not believe Congress intended that the Commission would have the power to do what only Congress can do. Secondly, we do not believe there is any justification for driving up the price of natural gas to artificially high levels through backdoor methods at a time when oil prices are collapsing and at a time

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when there is such a large surplus of natural gas.

We think Congress owes it to the consumers of this country to investigate the FERC's actions; to examine closely the activities of the FERC's Chairman Mr. Butler, who has now been asked to recuse himself from four proceedings, on the grounds that he has prejudged the outcomes; to prevent the Commission from usurping Congressional authority to decide whether or not to accelerate the decontrol of natural gas prices.

If the Commission is allowed by Congress to administratively decontrol natural gas prices, there is no doubt that the economies of gas consuming states will be damaged even more than they have been. Raising gas prices above levels necessary to bring forth additional supply simply shifts wealth from consumers to producers; deprives energy using industry of needed capital for modernization and expansion; and deprives consumers of needed revenue to spend on other goods and services. We are not just talking about low-income residential gas consumers in Ohio or Maryland. We are also talking about farmers in Texas who are facing bankruptcy, because they cannot afford to buy natural gas to operate their irrigation pumps. We are talking about fertilizer manufacturers in Idaho who are facing severe competition from firms in Canada, Mexico, the Soviet Union and Saudi Arabia where the price of gas feedstock is controlled at lower prices. We are talking about U.S. chemical producers (other than those affiliated with the major oil companies) who will lose not only foreign markets, but domestic markets as well to manufacturers in the above-mentioned markets.

In an earlier study, when it was still possible President Reagan might send up decontrol legislation to Congress, we estimated the cost of accelerated decontrol to the nation's farmers. These production cost increases amounted to $8.2 billion over the three-year period 1982-84. Fertilizer prices, for example, were estimated to increase by $100 per ton in the first year of accelerated decontrol.

To understand the impact of an acceleration of natural gas prices, we need only consider a recent observation in Business Week which reported:

> For almost a decade the rising price of OPEC oil has gripped the world economy in a vise. Reeling from the twelvefold price increase from 1973 to 1981, the industrial nations...not only went plummeting into two recessions but also suffered further as inflation rates soared to record levels.

In the United States the average price of natural gas has experienced a tenfold increase since 1973.

If the FERC succeeds in accelerating decontrol of natural gas prices, some of the nation's largest industries will suffer substantial and unavoidable cost increases for their manufacturing processes. Some industries will pass on these higher gas costs to consumers. Others will have to absorb them, which will mean lower profits or closing down operations and eliminating jobs. Because natural gas is such an important input into many of the nation's most vital manufacturing processes, price increases resulting from administrative decontrol will push up the cost of new homes, automobiles, food, clothing, medicine and other consumer items.

If the FERC succeeds in accelerating the decontrol of natural gas prices, national output will be further reduced and inflation, unemployment and interest rates will remain high. In turn, these effects will combine to increase the federal government's budget deficit. The Treasury's tax receipts, already declining because of the current oil-price induced recession, will decline further.

Finally, it needs to be pointed out that the pricing incentives already in place under the NGPA have been more than generous and have increased the number of wells drilled since 1978. In fact, even though oil price decontrol was initiated in 1979 and speeded up in January 1981, according to the most recent drilling statistics, exploratory gas wells in 1981 exceeded exploratory oil wells by over 7 percent!

Between 1980 and 1981 gas well completions increased by nearly 14 percent. And the reason that production has not increased is due not to the fact that prices at the wellhead are too low, but to the fact that consumers have cut their consumption because prices are excessively high. Because industrial users are likely to shift to imported foreign oil because of the declining price, it makes good sense to maintain continued regulation of old gas as well as ceilings on new gas. By preventing backdoor decontrol, we can reduce the nation's dependence on imported oil.

TABLE I

COST OF NATURAL GAS TO U.S. INDUSTRY 1977-1979 and 1982-85
(in millions $)

INDUSTRY	1977		1978		1979		% Change 1977-79	
	¢/Mcf	Cost	¢/Mcf	Cost	¢/Mcf	Cost		
Chemical	138	$2049	152	$2194	184	2672	33%	30%
Primary Metals	165	1497	185	1839	214	2290	30	53
Pet. Refining	147	1546	173	1497	205	1960	40	27
Stone,Clay&Glass	170	890	194	1043	236	1260	39	42
Paper&Al Prods.	169	590	191	656	229	894	36	52
Food&Kin.Prods.	174	743	194	811	232	1020	33	37
Fab. Metals	189	349	211	412	245	449	30	29
Trans. Equip.	190	262	208	307	244	351	29	34
Mach.(ex.Elec)	184	235	209	286	242	332	32	41
Textile Mill	182	135	207	152	255	226	40	63
All Industry	150	10221	170	11516	199	13734	33%	34%
Producer Prices								20%

Source: Department of Commerce, Department of Energy, Department of Labor Statistics.

TABLE II

ESTIMATED COST OF ACCELERATED DECONTROL BY FERC
(in millions $)

Industry	Consumption	1982-84 NGPA Cost	1982-84 Partial Accel.	1982-84 Full Accel.	Diff. NGPA v Partial	Diff. NGPA Full
Chemical	1,425 Bcf	$11357	$14963	$19551	$ 3606	$ 8194
Primary Metals	990	7890	10395	13583	2505	5693
Petro. Refining	850	6775	8925	11662	2151	4888
Stone,Clay&Glass	540	4304	5670	7409	1366	3105
Paper&All. Prods.	360	2869	3780	4939	911	2070
Food&Kind. Prods.	420	3347	4410	5762	1063	2415
Fab. Metals	200	1599	2100	2744	506	1150
Trans. Equip.	150	1196	1575	2058	379	862
Machinery(Ex Elec)	140	1116	1470	1921	354	805
Textile Mill Prod.	90	717	945	1235	228	518
Total Industry	7,200	$57384	$75600	$98784	$18216	$41400

Source: Department of Energy, Department of Commerce.

TABLE III

IMPACT OF HIGHER NATURAL GAS PRICES ON CONSUMERS

SECTOR		1977			1978			1979			1980	
	Cons.	Cost	Price	Cons.	Cost	Price	Cons	Cost	Price	Cons.	Cost	Price
Residential	4821	$11324	$2.35	4903	$12565	$2.56	4965	$14772	$2.98	4752	$17497	$3.68
Commercial	2243	4719	2.10	2310	5302	2.30	2485	6883	2.77	2441	8359	3.42
Industrial	6817	10221	1.50	6757	11516	1.70	6899	13734	1.99	7172	18384	2.56
Total	19521	32450	1.78	19628	36378	1.98	20241	44784	2.34	19877	55739	2.91

Note: Consumption in billions of Mcf; cost in millions of dollars.

Source: Department of Energy

TABLE IV

CHANGES IN NATURAL GAS CONSUMPTION, PRICE AND COST 1977-1980

SECTOR	Change in Consumption	Change in Price	Change in Cost
Residential	- 1.4%	+ 56.6%	+ 54.5%
Commercial	+ 8.8%	+ 62.9%	+ 77.1%
Industrial	+ 5.2%	+ 70.7%	+ 79.9%
Total	+ 1.8%	+ 63.5%	+ 71.8%
CPI		+ 36.0%	
PPI		+ 35.9%	

citizen/labor energy coalition

BACK DOOR DECONTROL:

THE CONSUMER COSTS OF RAISING OLD NATURAL GAS PRICES

Summary and Findings

Although the President announced on March 1, 1982 that he did not intend to introduce legislation to accelerate natural gas decontrol this year, he also reaffirmed his commitment to the goals of natural gas decontrol. He reaffirmed that commitment again on March 15, while addressing the Oklahoma State Legislature. Most observers feel that the administration intends to achieve its decontrol objectives through actions taken by the Federal Energy Regulatory Commission (FERC) -- decontrol through the "back door". 1/ (FERC is the agency responsible for regulating natural gas prices.) In fact, C. M. Butler, the Chairman of FERC, has repeatedly stated his desire to see natural gas prices decontrolled altogether.

Administrative decontrol would be the result of several rulemakings each of which would raise the price of a separate category of gas. Legislative decontrol would have raised all gas prices simultaneously. In April, FERC intends to begin the process of raising "old gas" prices. (Old gas is gas produced from wells drilled before 1977.) Raising the price of old gas is the most controversial and economically significant proposal FERC will consider.

Raising old gas prices is controversial because, when Congress enacted the Natural Gas Policy Act (NGPA) in 1978, it sought to protect consumers from sharp increases in the price of already discovered gas. Congress reasoned that since this gas was already being profitably sold at a controlled price, gas producers did not need extra incentives. Raising old gas prices is economically significant because nearly 60% of all natural gas sold in interstate commerce is old gas. (Interstate sales account for approximately 55% of U.S. gas consumption.) The average price of this gas is less than one fourth the price the Administration believes the gas would sell at if it were decontrolled.

This analysis quantifies the impact raising old gas prices would have both on the economy and on individual gas heating households. Since FERC has not made known the exact level to which it would seek to raise old gas prices, this analysis presents a range of impacts. These impacts are based on two possible scenarios of FERC action. A low estimate is based on a scenario in which FERC pegs the price of old gas to the price of Section 103 gas;"* in the past FERC has used Section 103 prices as a base for raising the price of other categories of gas. Furthermore, setting the price of old gas at Section 103 levels is explicitly raised in an internal FERC memo outlining options to raise old gas prices. 2/ A higher estimate is based on a scenario, also referred to in the FERC memo, in which FERC attempts to meet the stated objective of its Chairman and of the White House: raising old gas prices so that they reach "market clearing" levels by December 31, 1984, the date for decontrol of new gas under the NGPA. It is important to note that in each scenario, the administration's own estimates of prices and quantities of old gas are used. Price estimates made by independent analysts are generally higher than the Administration's. Thus, this analysis presents a conservative range of impacts for possible FERC actions.

Based on the foregoing assumptions:

oRaising old gas prices could cost the economy as much as $48 billion over the next three years. If FERC adopts the lower priced scenario, based on letting the price of old gas rise to Section 103 price levels, the three year impact would be $21 billion. If, as is more likely, FERC attempts to raise old gas prices to the level the Administration predicts will be "market clearing" in 1985, the impact will be $48 billion.

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*Section 103 gas is primarily gas produced from new onshore production wells. See further discussion on p. 6.

	Section 103 Prices	"Market Clearing" Prices
1982	$7.5 Billion	$10.8 Billion
1983	6.9	16.2
1984	6.5	21.1
	$20.9 Billion	$48.1 Billion

o Raising old gas prices could cost the average gas heating household as much as $683 over the next three years.
If FERC adopts the lower scenario, based on letting the price of old gas rise to Section 103 price levels, the average extra cost for gas heating households would be $296. If, however, FERC attempts to raise the price of old gas to the level the Administration predicts will be "market clearing" the average extra cost for gas heating households would be $683.

	Section 103 Prices	"Market Clearing" Prices
1982	$106	$154
1983	99	231
1984	92	299
	$296	$683

o Raising old gas prices could cost the average gas heating household roughly $1000 in cities that are heavily dependent on old gas.
All utilities are not supplied in equal proportion with old gas. Thus, the impact of raising old gas prices will be most acute for those cities whose utilities rely on old gas. Other factors, such as climate and the price utilities currently pay for old gas, serve to create different impacts in different cities. Cities that would be hardest hit include:

Average three year cost for major cities

	Section 103 prices	"Market clearing" prices
Hartford, CT	$456	$1,028
Chicago, IL	456	1,131
Indianapolis, IN	508	1,051
Boston, MA	380	837
St. Paul, MN	461	976
Philadelphia, PA	417	891
Pittsburgh, PA (Equitable Gas)	426	949
Providence, RI	616	1,256
Memphis, TN	456	930
Milwaukee, WI	339	813

- Raising old gas prices is only one part of the administration's backdoor decontrol strategy -- taken together with proposals to raise other categories of gas, gas heating consumers could expect their bills to increase by several hundred dollars each year. For example, FERC is currently considering a proposal to increase prices for natural gas from wells drilled to between 10,000 and 15,000 feet. Adoption of this proposal could cost consumers an additional $9 billion.

- Raising old gas prices most severely affects Northern states. More than 60% of the approximately 11 trillion cubic feet of gas sold in interstate commerce is consumed in 15 northern and northern and midwestern states. Furthermore, more than 90% of the gas consumed in these states is interstate gas.

Finally, it is important to note that this study does not estimate the indirect costs of FERC actions -- costs consumers pay whenever they buy goods and services produced with natural gas. Nor does the study detail the indirect economic effects of this dollar drain from residential communities. A previous Citizen/Labor Energy Coalition study has shown how higher gas bills increase unemployment by decreasing consumer purchasing power. 3/ Other studies have shown that higher gas bills increase inflation and cause economic dislocation.

I. Back Door Decontrol and Raising Old Gas Prices

A. The Political Context for Back Door Decontrol

Both as candidate and as President, Ronald Reagan has continually affirmed his commitment to natural gas decontrol. Natural gas decontrol is a major plank in the Republican Party's platform. In February of 1981, the Office of Management and Budget assumed that all controls on natural gas would be lifted by September 1981. Yet on March 1, 1982, the President announced that he would not seek legislation to decontrol natural gas in this Congress. The President also stated that he remained committed to the goal of higher natural gas prices. By the time President Reagan made this announcement, however, it had become increasingly obvious that the Administration had decided that its decontrol objectives could be achieved with fewer political costs through actions taken by the Federal Energy Regulatory Commission. (FERC) (FERC is the federal agency regulating natural gas prices.)

C. M. Butler, both before and after President Reagan appointed him Chairman of FERC, has been an outspoken advocate of natural gas decontrol. As an aide to Senator John Tower, Butler helped mount Congressional efforts to decontrol natural gas. Butler is also the author of the Republican Party platform's natural gas plank.

At his confirmation hearings, Butler stated, "all natural gas prices should be price decontrolled at the wellhead."

Since then, as Chairman, Butler has repeatedly stated his believe in decontrol and in the efficacy of FERC acting to raise gas prices

On January 6, 1982 in an essay published by the Cleveland Plain Dealer, Mr. Butler stated:

> All gas categories should be phased up to a target market clearing level by Jan. 1, 1985. On that date, all regulation of natural gas prices should be terminated.

On October 9, 1981 Mr. Butler in a speech before the Cleveland Chemical Association criticized continued regulation of natural gas prices and stated that, "Only total deregulation offers a really viable solution."

Mr. Butler also stated in a story in The Washington Post, "In our analysis the consumer obtains no benefit from continuing price controls." 4/

On February 10, 1982 in an interview with "Eyewitness News" on television station WDVM in Washington, D.C., Mr. Butler stated:

> And what we propose to do is to phase that (very sharp precipitous increase in prices) in so that it just doesn't hit them (consumers) all in the face at one time.

Based on an interview with Mr. Butler, Inside F.E.R.C., an energy industry trade journal, reported, "(his) staff will be ready with a notice of proposed rulemaking (to raise old gas prices) if progress in Congress is halted by the ideological opposition" to decontrol that Butler sees on the Hill. 5/

In short, as he told The Washington Post, Chairman Butler is eager to "test the frontiers" of the NGPA to ease gas price controls. 6/

B. The Road to Backdoor Decontrol

1. FERC Activities to Date

The NGPA created many categories of natural gas and assigned different prices to those categories. These prices reflect such factors as date of well completion, location of wells, depth and proximity to other wells. In general, prices of gas drilled after February 1977 (new gas) will be gradually decontrolled by 1985, while gas drilled before February 1977 increases by the general rate of inflation, but remains under control until its depletion.

In addition, FERC has the authority under Section 107(c) (5) of the NGPA to create new categories of natural gas and assign high "incentive" prices to them. The law requires FERC to make a finding that producing such gas presents "extraordinary risks or costs." Critics of FERC's use of this authority to date argue that FERC has not adequately documented "extraordinary risks or costs" for the categories it has created, nor has it considered the consumer impact of its actions.

Two final rulemakings have occurred under Section 107(c) (5). In August of 1980, FERC allowed producers of gas from geologic formations known as tight sands to charge a price equal to twice the price allowed for Section 103 gas. (Section 103 gas is essentially gas produced from wells started after Feb 1977 in already discovered areas.) Since that decision, FERC has classified over a hundred areas across the nation as tight sands gas formations, thus allowing a price of over $5.00/Mcf for significant amounts of gas.

On December 30, 1981, FERC ruled that producers of gas in off-shore areas, deeper than 300 feet, could charge a price equal to twice the price allowed for Section 103 gas.

A proposed rule before FERC has identified all gas at depths of 10,000-15,000 feet as "high cost, high risk" gas (Docket No. RM 82-8). The rule would allow producers to charge a price equal to 150% of the Section 103 price. (150% of Section 103 gas equalled $3.89/Mcf as of January 1982.) The Citizen/Labor Energy Coalition has estimated that this decision could cost consumers $6-9 billion if FERC chooses the 150% target (or about $100 per average gas heating household over the next three years) and $12-18 billion if the final rule sets a price 200% of the Section 103 price. 7/ Note that these impacts are not included in Table 5. This rule was proposed even though the FERC Director of Regulation has admitted that FERC does not have data on production or reserves at intermediate depths. 8/

2. FERC's Planned Activities: "Old Gas" Decontrol

Chairman Butler has repeatedly stated that all natural gas should be decontrolled by 1985. He believes that beginning this year natural gas prices should be increased so that by 1985, prices would be at "market clearing" levels. The most obvious method for FERC to increase the average price of all gas, is to increase the price of old gas; old gas currently accounts for 59% of all flowing interstate natural gas. FERC internal documents reveal that FERC is thinking about two steps to raise the price of old gas. 9/

Step 1: Removing Vintaging

NGPA Section 104 gas (gas sold in interstate commerce produced from wells begun before February 1977) and Section 106 gas (interstate gas subject to rollover contracts) is currently sold subject to price ceilings that range from $0.26 per Mcf to $2.15 per Mcf. The specific ceiling price applicable to this gas is determined by various factors including dates of well commencement, and dates of execution of producer-pipeline contracts. Each of the separate ceiling prices for old gas is termed a " vintage."

FERC is expected to consider a staff proposal to eliminate vintaging. This would allow all old gas to be sold at the highest ceiling price instead of the current ceilings for the different vintages. Eliminating vintaging could raise the average price of old gas from a current level of $1.03/mcf to the current ceiling price of over $2.00/Mcf, and could take the cheapest old gas as $0.26/Mcf and increase it by a factor of more than 7.

Step 2: Raising the Ceiling Price for Old Gas

After eliminating vintaging, FERC could then consider raising the maximum price for old gas prescribed by the NGPA. FERC lawyers believe that the NGPA allows changes in the price of old gas if the new prices are "just and reasonable." The resulting ceiling price could be the current NGPA ceiling price on Section 103 gas (roughly $2.70), or the ceiling price could go as high as the so-called market clearing price which reflects the price of competing fuels.

A combination of the two proposals -- elminating vintaging and raising ceiling prices -- will have a signficant effect on end-users' bills. The analysis that follows seeks to determine the extent of residential cost increases that could result from raising old gas prices.

II. Methodology

A. Price Scenarios

The two scenarios chosen for administrative decontrol of old gas assume the elimination of vintaging. Thus, all old gas moves from its various regulated prices to new ceilings.

The first, and low estimate, for well-head prices is calculated by setting prices equal to the price for Section 103 gas. Section 103 gas is subject to a price ceiling above that for old gas (Sections 104 and 106).

FERC has shown its willingness to use Section 103 as a yardstick for recent pricing changes. Currently, deep water gas receives a price equal to double the Section 103 price, and tight sands gas also receives a price double this Section's price. The proposed rulemaking on intermediate deep gas would set that gas equal to 150% of Section 103 prices. Moreover, FERC's internal document on old gas suggests Section 103 prices as a possible candidate for a "peg" for old gas:

> ...for the Commission to set just and reasonable rates for interstate flowing gas -- even of the oldest vintage -- which approach or even exceed the Section 103 price is not necessarily inconsistent with the policy of the legislation (NGPA) as a whole.10/

The second, and higher estimate is projected based on the assumption that FERC will attempt to raise old gas prices so that on January 1, 1985, old gas prices will be at "market clearing" levels. The "market clearing" price assumed in this analysis is the lowest projection made by the White House in its analysis of accelerated decontrol.11/

The case that FERC will try to move old gas price ceilings toward "market" prices is a strong one; indeed, there is more evidence that FERC will choose this yardstick than there is evidence that the peg will be Section 103. In FERC's "old gas" price memorandum and in Chairman Butler's public statements, there is the repeated desire to move old gas toward "market" or replacement costs:

> ...there may be greater authority than generally recognized for the Commission to utilize replacement costs (or commodity value) theories in setting just and reasonable rates under Section 104 (b) (2) (old gas). 12/

Chairman Butler has also stated:

> Instead of allowing partial decontrol to occur under the NGPA prescription, all gas should be decontrolled by 1985. This means increasing gradually, beginning in 1982, the well-head price of certain categories of gas that are scheduled to remain regulated under the NGPA. 13/

The following table shows the well-head prices for old gas under three cases: 1) Continuation of NGPA ceilings as is; 2) Section 103 equivalency, and 3) prices targetted toward market prices projected by the Administration.

Table 1: Well-Head Price Forecasts

	1982	1983	1984
	(Dollars/Mcf)		
Continuation of NGPA	1.14	1.26	1.38
Pegging to 100% of Section 103	2.48	2.65	2.83
Moving toward market prices	3.09	4.51	6.12

All prices are in current dollars. 14/ Prices for the NGPA case and the Section 103 case use the Energy Information Administration's forecasts on gas prices, escalated to reflect inflation. 15/

B. Derivation of National Impact

The total impact of each proposal is computed based on the price assumptions made above, and upon the estimates of the annual supply of old gas made recently by the Energy Information Administration of the Department of Energy (EIA). Table 2 sets out those estimates:

Table 2: Estimated Annual Supply of Old Interstate Gas (in trillion cubic feet)

	Section 104	Section 106(A)	Total old gas
1982	4.67 TCF	.89 TCF	5.56 TCF
1983	4.09	.90	4.99
1984	3.48	.98	4.46

Source: An Analysis of the Natural Gas Policy Act and Several Alternatives, Natural Gas Division, Office of Oil and Gas, Energy Information Administration, December, 1981, p. 49.

C. Derivation of Average Gas Heating Household Impact

The impact either scenario of price increases would have on an average household is a function of (1) the household's actual gas consumption; (2) the volume of old gas purchased by the utility serving the household; and (3) the price the utility currently pays for the old gas it buys. For each utility, points (2) and (3) are a function of the volumes purchased, and prices paid at the well-head by the pipeline(s) serving the utility. Thus, each utility, and, in turn, each household, will be affected differently depending upon the pipelines serving the community and factors that determine consumption, for example, climate.

Thus, the process of determining the impact of raising old gas prices on a particular community is a three step process beginning with a pipeline's purchase of old gas at the well-head and ending with the consumer's purchase from the utility.

1. Pipeline well head purchases.

There are twenty major interstate pipelines which account for over 90% of all interstate natural gas shipments. Based on information compiled by the Energy Information Administration on the average price paid for old gas by each pipeline, and the percentage of the pipeline's total volume made up by old gas, the impact of both scenarios of price increases on each pipeline could be determined. Estimates for the price and percent of old gas in 1982, 1983, and 1984 were made by applying EIA's estimates of the average price increase for old gas under NGPA, and the average percent decline in old gas supplies. Table 3 sets out the data collected by EIA on each pipeline:

Table 3: 1981 Average Old Gas Prices and Percent of Supply; Twenty Major Interstate Piplelines

Pipeline	1981 % Old Gas	1981 Acquisition Cost, Old Gas $/Mcf
Southern	56%	1.19%
Transco	43	1.49
United	34	1.03
Consolidated	29	1.45
Trunkline	68	1.68
CIG	46	0.97
Columbia	38	1.37
Northwest	62	1.24
Michigan/Wisconsin	70	1.34
El Paso	59	1.13
Transwestern	48	0 78
Florida Gas	66	1.02
Texas Gas	70	1.19
Natural Gas Pipeline	78	1.37
Tennessee	71	1.47
Kansas/Nebraska	74	0.98
Northern Natural	68	0.91
Panhandle Eastern	64	0.91
Cities Service	44	0.55
Texas Eastern	79	0.86

(Note: Old gas is Section 104 and 106. Acquisition costs are not the same as well-head costs, reflecting pipeline company gathering and treating costs. Each pipeline's acquisition costs have been adjusted to reflect well-head cost component for city impact numbers. Average interstate well-head costs for old gas in 1981 were $1.03/Mcf; average acquisition costs, or the weighted by volume average of the above costs, was $1.21/Mcf.)

Source: Energy Information Administration, Op Cit, p. 66.

2. Utility Purchases from Pipeline(s).

The impact of each scenario of price increases on each utility is simply the impact of the scenarios on each pipeline serving the utility, weighted by the relative contribution of each pipeline to the utility. Table 4 identifies the pipelines serving the 75 cities analyzed in this report. The sources of this data are Moody's Public Utility Manual and contact with utilities.

3. Consumer Purchase from Utility.

The impact of each scenario of price increases on an average gas heating household is simply that household's consumption multiplied by the utility's unit cost increase. The sources for the average consumption by gas heating

TABLE 4

CITY & STATE	Southern	Transco	United	Consolidated	Trunkline	CIG	Columbia	Northwest	Michigan/ Wisconsin	El Paso	Transwestern	Florida Gas	Texas Gas Trans	Natl. Gas P.	Tennessee	Kansas/ Nebraska	Northern Natl.	Panhandle Eastern	Cities Service	Texas Eastern	Other
CALIFORNIA Los Angeles										X	X										X
San Francisco										X											
CONNECTICUT Bridgeport															X					X	
Hartford															X					X	
WASH. D.C.		X					X														
FLORIDA Miami												X									
GEORGIA Atlanta	X	X																			
ILLINOIS Carbondale					X									X				X		X	
Chicago														X							X
Decatur					X									X				X			X
Peoria																		X			
Springfield																		X			
Rock Island														X							
Rockford														X			X				X
INDIANA Ft. Wayne					X									X	X			X			
Indianapolis																		X			
Muncie													X					X			X
IOWA Des Moines														X			X				
Cedar Rapids														X			X				
KENTUCKY Louisville													X								
MARYLAND Baltimore							X														
MASS. Boston															X					X	X
MICHIGAN Adrian																		X			
Battlecreek																		X			
Calumet																	X				
Detroit									X									X			
Jackson					X													X			

CITY & STATE	Southern	Transco	United	Consolidated	Trunkline	CIG	Columbia	Northwest	Michigan/ Wisconsin	El Paso	Transwestern	Florida Gas	Texas Gas Tran	Natl. Gas P.	Tennessee	Kansas/ Nebraska	Northern Natl.	Panhandle Eastern	Cities Service	Texas Eastern	Other
MICH. (Cont) Monroe					X				X									X			
Port Huron																		X			X
Three Rivers									X												
MINNESOTA Duluth																	X				
Minneapolis																	X				
St. Paul															X		X				
MISSISSIPPI Jackson	X		X										X								
MISSOURI Kansas City																			X		X
St. Louis																					X
NEBRASKA Lincoln																X					
NEW JERSEY Asbury Pk.																				X	
Atlantic City		X																			
Dover																				X	
Elizabeth		X					X								X					X	
Newark		X													X					X	X
Swainton		X																			
NEW YORK Buffalo				X											X					X	X
Long Island		X													X					X	
Brooklyn		X													X					X	
New York		X													X					X	
NO. CARO. Raleigh/Durham		X																			
Winston-Salem		X																			
OHIO Cincinnati							X														
Cleveland				X														X			
Columbus							X														
Toledo							X														
Dayton							X														

CITY & STATE	Southern	Transco	United	Consolidated	Trunkline	CIG	Columbia	Northwest	Michigan/ Wisconsin	El Paso	Transwestern	Florida Gas	Texas Gas Trans	Natl. Gas P.	Tennessee	Kansas/ Nebraska	Northern Natl.	Panhandle Eastern	Cities Service	Texas Eastern	Other
OREGON Portland								X													
PENNSYLVANIA Harrisburg		X					X														X
Allentown & Bethlehem		X					X														X
Erie				X											X					X	X
Philadelphia		X																		X	
Pittsburgh							X								✓					X	X
RHODE ISLAND Providence																				X	
TENNESSEE Memphis																				X	
Nashville															X						
VIRGINIA Norfolk		X					X														
Richmond		X					X														
WASHINGTON Seattle								X													
WEST VA. Charleston							X														
WISCONSIN Fond duLac									X								X				
Racine/ Kenosha									X												
Madison									X								X				
Milwaukee									X												

households in each city are the American Gas Association's Househeating Survey, 1979, Browns Directory of Gas Distribution Companies, and gas utilities' annual reports. Average consumption, for each city, is presented in Table 5.

When these three pieces are put together, the equation for determining the impact on an average gas heating household in a particular city can be expressed as:

$$C_{jk} = c_k \sum X_i O_{ij} (P_{Fj} - P_{Nji})$$

Where: C = Average cost increase for gas heating household as a result of FERC action in year j in city k.

c = Average residential consumption in city k

X_i = The percentage of gas supplied to the local utility by pipeline i

O_i = Pipeline i's old gas percentage in year j

P_{Fj} = FERC's raised old gas ceiling price in year j

P_{Nji} = Pipeline i's old gas price under the current interpretation of the NGPA in year J.

The impact on the average U.S. gas heating household was determined based on average national consumption and EIA's estimate of annual old gas supplies.

III. The Results

Based on the assumptions made in Section II (which are grounded in the political realities described in Section I), the local and national impacts of raising old gas prices were determined. Table 5 sets out the results for 75 cities.

In some cities, impacts for both scenarios are below the national average given in Table 6. An impact below the national average can occur because of one of the following factors or a combination thereof:

1. There is little old gas in the pipeline(s) that serve(s) the city's utility.
2. The price of what old gas there is in the pipeline is above the national average.
3. Average annual consumption among residential gas heaters is low.

For those cities where the 3rd factor causes a lower than average impact, it should be noted that the percent increase in bills will be quite high.

Table 3

Average Gas Heating Consumer Impact of Raising Old Gas Prices

			COST IMPACTS							
		AVERAGE	1982		1983		1984		TOTAL	
STATE	UTILITY	CONSUMPTION	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
California										
Los Angeles	Sou. Calif. Gas	95 mcf	$71	$99	$66	$145	$62	$186	$199	$430
San Francisco	P.G.&E.	90	29	42	28	62	26	80	83	185
Connecticut										
Bridgeport	South. Ct. Gas	156	145	209	136	310	126	400	407	919
Hartford	Ct. Natural Gas	174	163	233	152	347	141	448	456	1,028
D.C.										
Washington	Washington Gas Light	143	58	88	53	136	49	179	161	403
Florida										
Miami, St. Petersberg	Florida Gas	31	28	39	26	57	24	72	78	168
Georgia										
Atlanta	Atlanta Gas Light	102	65	95	61	143	57	186	183	425
Illinois										
Carbondale	CIPS	145	133	186	125	269	117	344	376	798
Chicago	Peoples Gas	200	164	248	152	382	140	502	456	1,131
Decatur	Il. Power	150	120	174	113	259	105	335	338	767
Peoria, Springfield	CILCO	155	143	197	135	283	127	359	406	840
Rock Island	Io-Il Gas & Elec.	151	125	189	116	291	106	383	347	863
Rockford	NI Gas	189	155	230	144	350	133	457	431	1,037
Indiana										
Ft. Wayne	Northern In/PSC	190	151	227	140	348	129	456	420	1,030
Indianapolis	Citizens Gas	194	180	247	169	354	159	450	508	1,051
Muncie	Indiana Gas	160	142	198	134	288	125	368	401	854
Iowa										
Cedar Rapids	Io-Il G & E	151	146	203	137	293	128	373	412	869
Des Moines	Io Power & Light	148	141	195	133	281	124	357	398	833

STATE	UTILITY	AVERAGE CONSUMPTION	1982 LOW	1982 HIGH	1983 LOW	1983 HIGH	1984 LOW	1984 HIGH	TOTAL LOW	TOTAL HIGH
Kentucky										
Louisville	Louisville G&E	138 mcf	$117	$169	$109	$253	$101	$328	$328	$751
Maryland										
Baltimore	BG&E	106	43	65	40	100	36	131	119	295
Massachusetts										
Boston	Boston Gas	162	135	192	127	282	118	363	380	837
Michigan										
Adrian	Citizens Gas Fuel	182	168	232	159	332	149	422	476	986
Battle Creek	Battle Creek Gas	201	186	256	176	367	164	466	526	1,089
Calumet	Peninsular Gas	182	179	246	169	353	158	448	506	1,048
Detroit	Mich. Con.	184	112	166	104	252	96	329	312	747
Jackson	Consumers Power	165	104	164	96	261	87	347	287	772
Monroe	Mi. Gas Utilities	199	154	225	143	339	133	442	430	1,006
Port Huron	SE Mi Gas	196	172	238	163	343	152	436	487	1,017
Three Rivers	Mi Power	193	152	222	141	333	131	433	424	988
Minnesota										
Duluth	Dept. of Water & Gas	215	211	291	200	417	187	530	598	1,238
Minneapolis	Mn. Gas Co.	160	157	216	148	311	139	394	445	921
St. Paul	Northern States Power	170	163	227	154	329	144	420	461	976
Mississippi										
Jackson	MS Valley Gas	95	54	77	50	115	47	148	150	340
Missouri										
Kansas City	Gas Service Co.	140	107	141	102	195	96	243	306	579
St. Louis	Laclede Gas	135	95	138	89	207	82	269	266	615

STATE	UTILITY	AVERAGE CONSUMPTION	1982 LOW	1982 HIGH	1983 LOW	1983 HIGH	1984 LOW	1984 HIGH	TOTAL LOW	TOTAL HIGH
New Jersey										
Asbury Park	NJ Natural Gas	167 mcf	$196	$268	$186	$382	$174	$483	$556	$1,133
Atlantic City	S. Jersey Gas	173	71	112	66	176	60	234	197	523
Dover	NJ Natural Gas	167	196	268	186	382	174	483	556	1,133
Elizabeth	Elizabethtown Gas	179	92	138	85	212	78	278	255	628
Newark	PSE&G	157	105	152	98	229	90	297	293	678
Swainton	NJ Natural Gas	167	69	108	63	170	58	226	190	505
New York										
Buffalo	Natural Fuel Gas	167	116	173	108	264	99	346	323	784
Long Island	LILCO	173	89	134	82	206	76	271	247	611
New York	Bkln. Union	168	90	135	83	208	77	273	250	617
New York	Con Ed	156	87	130	81	198	75	260	242	588
North Carolina										
Durham, Raleigh	Public Service Co.	123	51	80	47	125	43	167	140	372
Winston-Salem	Piedmont	101	38	60	35	95	32	126	106	281
Ohio										
Cincinnati	CG&E	141	57	86	53	132	48	174	158	392
Cleveland	East Ohio Gas	161	62	90	58	136	54	177	173	403
Columbus, Toledo	Columbia Gas	157	63	96	59	147	54	194	176	437
Dayton	Dayton Power & Light	150	60	91	56	141	52	185	168	418
Oregon										
Portland	NW Natural Gas	86	61	89	57	135	53	175	171	400
Pennsylvania										
Allentown, Bethlehem Harrisburg	UGI	132	54	82	50	126	46	165	150	373
Erie	National Fuel Gas	167	116	173	108	264	99	346	323	784
Philadelphia	Phil. Gas Works	164	148	207	139	300	130	364	417	891
Pittsburgh	Columbia Gas	163	66	99	61	153	56	201	183	454
Pittsburgh	Equitable Gas	167	152	217	142	320	132	412	426	949

STATE	UTILITY	AVERAGE CONSUMPTION	1982		1983		1984		TOTAL	
			LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Rhode Island										
Providence	Providence Gas	185 mcf	$217	$297	$206	$423	$193	$535	$616	$1,256
Tennessee										
Memphis	Memphis Light & Gas	137	161	220	152	313	143	397	456	930
Nashville	Nashville Gas	128	89	138	82	217	75	288	245	643
Virginia										
Norfolk	VEPCO	102	41	63	38	97	35	128	115	289
Richmond	Dept. of Pub. Util.	94	38	58	35	90	32	118	106	266
Washington										
Seattle	WA Natural Gas	120	87	127	81	192	75	250	243	569
West Virginia										
Charleston	Columbia Gas	137	55	84	51	129	47	169	153	381
Wisconsin										
Fond DuLac	WI Power & Light	148	116	172	108	262	100	342	324	776
Kenosha, Racine	WI Natural Gas	161	122	184	113	281	105	369	340	834
Madison	MG&E	153	116	174	108	267	99	351	324	792
Milwaukee	WI Gas	155	122	180	113	274	104	358	339	813

Southern cities or temperate coastal cities have less residential consumption and lower household gas bills. The $200-$300 cumulative increase in such cities represents a large percent increase over current bills.

In many cities, for example, Hartford, Ct.; Chicago, Il.; Indianapolis, In.; Detroit, Mi.; Minneapolis/St. Paul, Mn.; Buffalo, N.Y.; Philadelphia, Pa; Milwaukee, Wi., and, others) the cost impact for both cases is greater than the average. Here the range in cumulative impact can be $500-$1,000. Households in cities that are heavily dependent on old gas will be more severely impacted. Similarly, households with high gas consumption will have a greater expense.

An important qualification to the above discussion is that there are households in all cities that consume above the average. Poorly insulated or large dwellings, for example, will experience a larger than average expense. Many large households in cities across the U.S. consume, for example, twice the average.

Finally, it should be noted, that the annual impact of the first scenario declines from 1982 to 1984 because prices do not increase enough to compensate for declining old gas volumes.

Table 6 sets out the impact on the average U.S. gas heating household.

Table 6: Average Cost of Raising Old Gas Prices for U.S. Gas Heating Households ($ current)

	Section 103 Prices	"Market clearing" Prices
1982	$106	$154
1983	99	231
1984	92	299
	$296	$683

Table 7 sets out the impact on the U.S. economy.

Table 7: Total Cost of Raising Old Gas Prices ($ current)

	Section 103 Prices	"Market clearing" Prices
1982	$7.5 Billion	$10.8 Billion
1983	6.9	16.2
1984	6.5	21.1
	$20.9 Billion	$48.1 Billion

NOTES

1/ See, for example, "Agency Seeks Eased Control of Gas Prices," *Washington Post*, February 22, 1982, p. 1; "Reagan Ends Push on Gas Decontrol," *New York Times*, March 2, 1982; "Agency Speeds Gas Decontrol, Stirring Fight," *Wall Street Journal*, February 9, 1982; "A Backdoor Approach to Raising Gas Prices," *Business Week*, February 15, 1982; and "Reagan Won't Ask Quick Natural Gas Decontrol in 1982," Washington *Post*, March 2, 1982.

2/ The principal document relied upon to infer FERC's pricing desires is a memorandum from Philip Marston, FERC Office of Regulatory Analysis to Mike Butler, regarding the elimination of vintaging and other possible changes to old gas prices, dated November 10, 1981. (Hereafter referred to as "Marston Memo.")

3/ *Pipeline to Disaster*: *The Impact of Natural Gas Decontrol on U.S Jobs*, June 1981.

4/ "Agency Seeks Eased Control of Gas Prices," Washington *Post*, February 22, 1982, p. 1.

5/ *Inside Ferc*, January 25, 1982, p. 1

6/ "Agency Seeks Eased Control of Gas Prices," Washington *Post*, February 22, 1982, p. 1.

7/ "An Estimate of the Consumer Cost of the Administration's Proposal to Increase the Price for So-Called Intermediate Deep Natural Gas," a report of the Energy Action Project of the Citizen/Labor Energy Coalition, January 18, 1982.

8/ *The Washington Post*, January 11, 1982.

9/ Marston Memo.

10/ Marston Memo, p. 30.

11/ The Administration proposal is "Natural Gas Strategy Paper," from Danny J. Boggs, Executive Secretary, Cabinet Council on Natural Resources and Environment, July 28, 1981. Note that the price used in this analysis is the *lowest* estimate of *average* prices made in the memo. The *highest* estimate of *marginal* (or true market clearing) price made in the memo is 10% higher.

12/ Marston Memo, p. 24.

13/ "Natural Gas Deregulation Primer," by Charles M. Butler III, *The Plain Dealer*, January 6, 1982.

14/ Inflators taken from Congressional Budget Office estimates: 1981 (10.3%); 1982 (7.5%); 1983 (6.9%); 1984 (6.9%).

15/ "An Analysis of the Natural Gas Policy Act and Several Alternatives, Part 1, The Current State of the Market," Energy Information Administration, December 1981, p. 51.

AN ESTIMATE OF THE CONSUMER COST OF THE ADMINISTRATION'S PROPOSAL TO INCREASE THE PRICE FOR SO-CALLED INTERMEDIATE DEEP NATURAL GAS

A Report of the
Energy Action Project of the
Citizen/Labor Energy Coalition

January 18, 1982

INTRODUCTION

On December 30, 1981 the Federal Energy Regulatory Commission (FERC) proposed to increase the ceiling price for natural gas produced from depths between 10,000 and 15,000 feet.[1] In its rulemaking notice the FERC stated:

> Information obtained by the Commission through its own expertise and comments,...indicate that gas produced from depths between 10,000 to 15,000 feet is high-cost, high-risk gas. Accordingly, we propose to establish an incentive price ceiling for such gas.[2]

Even though the FERC claims to have information indicating that natural gas produced from depths between 10,000 and 15,000 feet is high-cost and high-risk, the Commission's own chief economist, Mr. Robert Means, admitted to The Washington Post that the agency "has no good figures on the quantity of gas involved and how much of it could be retrieved before 1985."[3]

To assist the FERC, the Congress and the public in evaluating the consumer cost of the Commission's proposed rulemaking, we have prepared a simple and reasonable estimating procedure based on established industry data and logical economic assumptions. In making this estimate, we seek not only to indicate the magnitude of the potential consumer cost of the FERC's proposal, but also to induce both the Commission and the producing industry to come forward and present the public with all the facts and data necessary for a fair and informed decision. Without these vital facts and data, the FERC can neither evaluate the merits of, nor make a rational decision on its proposed rulemaking.

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[1] "Notice of Proposed Rulemaking," Docket No. RM82-8, "High-Cost Natural Gas Produced from Intermediate Deep Drilling," December 30, 1981.

[2] Ibid., p.4.

[3] The Washington Post, January 11, 1982.

SUMMARY OF FINDINGS

Using information contained in the most recent Joint Association Survey on Drilling Costs published by the American Petroleum Institute[4] and the Department of Energy's U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves[5], we estimate that between 30 and 35 percent of the nation's newly discovered reserves of natural gas are located between 10,000 and 15,000 feet.

Assuming that between 15 to 20 trillion cubic feet of new natural gas reserves will be found in each of the years 1982, 1983 and 1984[6] and assuming that the reserves found are produced over seven years (in other words assuming a Reserve/Production Ratio of 7), then we estimate that the added cost to consumers would range from:

1) $6 billion to $9 billion over the three-year period, if the FERC allows a price 150% of the Sec. 103 price;

or

2) $11 billion to $18 billion over the three-year period, if the FERC allows a price 200% of the Sec. 103 price.

The cost to the average American family will vary depending on whether or not the family uses natural gas for heating purposes and on whether the Commission chooses not to do anything, or chooses the 150% option, or the 200% option.

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[4] Joint Association Survey on Drilling Costs sponsored by the American Petroleum Institute, Independent Petroleum Association of America and the Mid-Continent Oil & Gas Association, 1977 through 1980 issues.

[5] U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, annual reports for 1977 through 1980, U.S. Department of Energy, Energy Information Administration.

[6] According to DOE's annual reports on reserves of natural gas (see footnote 5), new discoveries amounted to approximately 15 Tcf in 1977, 18 Tcf in 1978, 15 Tcf in 1979 and 15 Tcf in 1980. Thus, given the steadily increasing price for new natural gas (even under current law), there is every reason to believe that such finding rates will continue.

If the Commission chooses to raise the price for this natural gas to 150% of the Sec. 103 price, then over the 1982-1984 period:

1) the average gas-using family would have to pay an additional $94 to $147 in higher direct and indirect gas costs;

and

2) the average non-gas using family would have to pay an additional $61 to $95 in higher indirect gas costs.

If, however, the Commission, as it has done in similar proceedings, chooses to raise the price for this gas to 200% of the Sec. 103 price, then over the 1982-1984 period:

1) the average gas-using family would have to pay an additional $190 to $295 in higher direct and indirect gas costs;

and

2) the average non-gas using family would have to pay an additional $123 to $191 in higher indirect gas costs.

Similarly, other gas consumers -- industrial and commercial users -- as well as consuming states would face significant increases in natural gas costs. If the Commission raises the price to 150% of the Sec. 103 price, then the following increases would occur:

All Residential Users	--	$1.4 - $2.2	billion
All Industrial Users	--	1.7 - 2.7	"
All Commercial Users	--	0.7 - 1.1	"
Major Industries			
Chemical	--	$171 - $267	million
Iron and Steel	--	158 - 245	"
Paper	--	75 - 116	"
Glass	--	52 - 80	"

Some Major Gas Consuming States

California	--	$487 - $758 million
Illinois	--	315 - 490 "
Ohio	--	259 - 401 "
Pennsylvania	--	199 - 312 "
New York	--	171 - 267 "
Indiana	--	142 - 222 "
New England	--	86 - 134 "
Georgia	--	86 - 134 "
Florida	--	65 - 104 "
Arkansas	--	57 - 89 "

If the Commission decides to increase the price for this gas to 200% of the Sec. 103 price, then over the 1982-1984 period the following increases would occur:

All Residential Users	--	$2.9 - $4.5 billion
All Industrial Users	--	3.4 - 5.3 "
All Commercial Users	--	1.4 - 2.2 "

Major Industries

Chemical	--	$342 - $534 million
Iron and Steel	--	316 - 490 "
Paper	--	150 - 232 "
Glass	--	104 - 160 "

Some Major Gas Consuming States

California	--	$974 - $1516 million
Illinois	--	630 - 980 "
Ohio	--	518 - 802 "
Pennsylvania	--	398 - 624 "
New York	--	342 - 534 "

Some Major Gas Consuming States (cont.)

Indiana	--	$284 - $444	million
New England	--	172 - 268	"
Georgia	--	172 - 268	"
Florida	--	130 - 208	"
Arkansas	--	114 - 178	"

At a time when the economy is still reeling from losses in output, massive layoffs and unemployment, many of the states and industries dependent on natural gas as one of their primary sources of fuel will feel the impact of the increases contemplated by the FERC's proposal.

If consumers will be hurt, to what degree will producers be helped? While the question is difficult to answer, it is apparent from the data available for the last four years that the current law seems to provide producers with sufficient incentives to drill gas wells to depths greater than 10,000 feet. Moreover, because most drilling is planned one to three years in advance, because producers have been increasing the number of wells drilled between 10,000 and 15,000 feet by about 14% per year under the current law, and because producers anticipate the decontrol of new natural gas in 1985, a higher price for gas in this category is unlikely to increase significantly the number of wells drilled, the reserves found, or the gas produced over the next three years. All that can be said with certainty is that producers will be able to increase their profits on wells they would have drilled anyway at the lower price levels.

BACKGROUND

Under the Natural Gas Policy Act of 1978 (NGPA), the Commission has the authority to

> ...prescribe a maximum lawful price, applicable to any first sale of any high-cost natural gas, which exceeds the otherwise applicable maximum lawful price to the extent that such special price is necessary to provide reasonable incentives for the production of such high-cost natural gas.

The NGPA specifically sets out certain forms of high-cost gas, such as gas produced from coal seams, Devonian shale and geopressurized zones. It also includes gas that is "produced under such other conditions as the Commission determines to present extraordinary risks or costs." It is under the latter definition that the FERC has promugated its "intermediate deep" pricing proposal.

Previously the Commission determined that natural gas produced from so-called "tight-sand" formations should receive an incentive price. After proposing a price 50 percent higher than the price allowed, the FERC decided 50 percent wasn't enough and so gave producers a price 100 percent higher. In a second decision issued just after Christmas, 1981, the FERC allowed producers of gas in water depths exceeding 300 feet to also receive an incentive price 100 percent higher than previously allowed. Again, this was twice as much as it had originally proposed. In short, the FERC permitted a doubling of certain gas prices from the congressionally set level of approximately $2,50 per Mcf to $5.00 per Mcf.

A number of observers have remarked that the Reagan Administration has adopted a two-pronged strategy with regard to natural gas pricing. One prong is legislative decontrol and the other is administrative decontrol. Before he became Budget Director, David Stockman spelled out the importance of the second prong--"There's a lot of discretion available to the commission (in) devising additional categories of high-cost or incentive gas that could for all practical purposes be deregulated." Wall Street analysts see the situation in the same light. "The Reagan Administration's most realisitc option is to provide incentive pricing for categories where it is needed--through the FERC as provided in the NGPA. We (Merrill Lynch) believe this approach can achieve many of the same results as can accelerated decontrol, and yet avoid many of the (political)risks associated with the latter."

When the FERC proposed this latest piece of administrative decontrol, The Wall Street Journal's Gary Putka observed, "Anaylst Barry Sahgal of Bache Halsey Stuart Shields says the FERC's moves may be a signal that the Reagan administration prefers regulatory decontrol to new laws..." Furthermore, according to Putka, "Onshore, gas abounds between 10,000 feet and 15,000 feet in the Anadarko Basin of Oklahoma and Texas."

METHODOLOGY

While Wall Street analysts and oil company officials appear to know a great deal about how much natural gas exists at 10,000 foot to 15,000 foot depths, U.S. Government officials appear to have little, if any, information on which to base regulatory policy. Using publicly available data, we have devised a methodology for approximating the amount of natural gas reserves that may be found in any given year at various producing depths. While this method has its limitations (solely because of missing reserve data), we are certain that our findings still provide an appropriate approximation for the reserves likely to be found.

Using the most current data published by both the oil and gas industry and the Department of Energy, we have calculated the gas reserves found at each producing depth for the years 1977 through 1980. Since we know how many wells were drilled at each depth and since we know the average cost per well, we can calculate the reserves if we make an estimate of the average cost per Mcf of finding and developing new natural gas reserves. While we emphasize that we know of no publicly available data on reserves by depth, we do know the total new natural gas reserves reported in any given year. Thus, the reserves estimated for each depth must equal the reported new gas reserves.

To arrive at our depth interval gas reserve estimates, we assume a certain average cost per Mcf for each depth. These cost figures also are assumed to increase with depth. For example, in 1979 we assume that for depths 0 - 7,499 feet, the cost per Mcf was 30 cents.[7]

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[7] As a means of checking the validity of our assumption, we examined Texas RRC District 7B where only wells between 0 and 7,499 feet were drilled in 1979. At a constant cost per Mcf of 28 cents, we were able to derive gas reserve estimates by depth equalling the reported reserves for Texas RRC District 7B for the year 1979. The table below illustrates our calculations:

Table for Footnote 7

Depth	MMcf/Well	# Wells	Reserves(Bcf)	Cost/Well	Cost/Mcf
0-1249	85	29	2.5	$ 23,790	$0.28
1250-2499	187	68	12.7	52,294	0.28
2500-3749	341	98	33.4	95,534	0.28
3750-4999	545	157	85.6	152,511	0.28
5000-7499	724	116	84.0	202,734	0.28
Totals	466	468	218.0	$130,491	$0.28

For the depth category 7,500 - 9,999, we assume a cost per Mcf of 40 cents; for 10,000 to 14,999, we assume a cost of 50 cents per Mcf; for 15,000 to 19,999, we assume a cost of 60 cents per Mcf; and for depths below 20,000 feet, we assume a cost of 75 cents per Mcf. We believe these cost assumptions are reasonable. As an added check, we compared our calculations for reserve findings below 15,000 feet with those of industry economist Dr. Edward Erickson[8] and the Department of Energy[9]. For these depths, they both use an average finding rate of 400 Mcf/foot drilled. Using our methodology, the finding rate ranges from 317 Mcf per foot drilled in 1977 to 388 Mcf per foot drilled in 1979.

Tables 1A through 1D estimate the reserve findings by depth for the years 1977 through 1980. Based on these tables and the calculations from which they are derived, it is apparent that more and more reserves are being discovered at depths below 10,000 feet. The table below illustrates this finding:

Percentage of Reserves by Depth 1977-1980

Year	0-10,000 ft.	10,000-15,000 ft.	15,000-plus ft.
1977	67%	25%	8%
1978	64	27	9
1979	55	32	13
1980	51	33	16

[8] "In this economic, geologic and technical environment, it would not be surprising to see deep completions experience finding rates in the range of 300-600 MCF/FT drilled and also experience relatively low rates of decrease in finding rates over the 1980-1985 period," quoted in Natural Gas and the Natural Gas Policy Act: A Pragmatic Analysis by Dr. Edward W. Erickson, Natural Gas Supply Association, January 1981, p.45.

[9] See Appendix A to A Study of Alternatives to the Natural Gas Policy Act of 1978, U.S. Department of Energy, Office of Policy, Planning and Analysis, November 1981, p.A-53.

TABLE 1A 1980

Depth[1]	MMcf/Well[2a]	# Wells[1]	Reserves(Bcf)[3]	Cost/Well[1]	Cost/Mcf[2b]
0- 1249	83.3	654	54.0	$ 33,326	$0.40
1250- 2499	177.6	2487	437.3	71,053	0.40
2500- 3749	329.7	2553	833.3	131,870	0.40
3750- 4999	441.0	2596	1133.4	176,412	0.40
5000- 7499	862.3	3032	2588.4	344,937	0.40
7500- 9999	1488.1	1784	2628.3	744,025	0.50
10000-12499	2380.9	1216	2866.2	1,428,550	0.60
12500-14999	4043.4	534	2137.6	2,426,010	0.60
15000-17499	5357.2	257	1363.0	3,750,033	0.70
17500-19999	7960.6	67	528.1	5,572,420	0.70
20000-over	9860.2	45	439.3	8,381,150	0.85
Totals	987.5	15225	15034.0	$ 536,402	$0.54

NOTES

[1] These data are taken from the January 6, 1982 "News Release" summarizing the findings of the Joint Association Survey on Drilling Costs - 1980, American Petroleum Institute.

[2a] The numbers in this column are derived by dividing the Cost/Well by the Cost/Mcf.

[2b] The Cost/Mcf is estimated and it is assumed that the unit cost increases with deeper drilling.

[3] After determining the amount of MMcf/Well, an estimate for reserves is obtained by multiplying the MMcf/Well times the number of successful wells.

[4] In 1980, according to "U.S. Crude Oil and Natural Gas Reserves," the 1980 Annual Report published by the Department of Energy, October, 1981, 15,034.0 Bcf of new gas reserves were reported. Since our imputed total amounts to 15,160.3, we have adjusted the reserve numbers downward by a factor of one percent.

TABLE 1B 1979

Depth[1]	MMcf/Well[2a]	# Wells[1]	Reserves (Bcf)[3]	Cost/Well[1]	Cost/Mcf[2b]
0- 1249	94	812	75.5	$ 28,150	$0.30
1250- 2499	212	2249	472.0	63,570	0.30
2500- 3749	356	2607	918.8	106,909	0.30
3750- 4999	494	2231	1091.1	148,336	0.30
5000- 7499	977	2697	2608.7	293,021	0.30
7500- 9999	1830	1609	2915.1	732,112	0.40
10000-12499	2529	1091	2731.5	1,264,331	0.50
12500-14999	4089	490	1983.6	2,044,331	0.50
15000-17499	5762	209	1192.3	3,169,246	0.60
17500-19999	8007	64	507.3	4,403,905	0.60
20000-plus	12076	20	239.1	8,453,415	0.75
Totals	1045	14079	14707.2	$ 443,080	$0.43

NOTES

[1] These data are taken from the "1979 Joint Association Survey on Drilling Costs," published by the American Petroleum Institute, February, 1981.

[2a] See Table 1A.

[2b] See Table 1A.

[3] In 1979, according to "U.S. Crude Oil and Natural Gas Reserves," the 1979 Annual Report published by the Department of Energy, August, 1981, 14,707.2 Bcf of new gas reserves were reported. Since our imputed total amounts to 14,883.7, we have adjusted the reserve numbers downward by a factor of one percent.

TABLE 1C 1978

Depth[1]	MMcf/Well[2a]	# Wells[1]	Reserves(Bcf)[3]	Cost/Well[1]	Cost/Mcf[2b]
0- 1249	129.4	627	80.0	$ 21,994	$0.17
1250- 2499	352.5	1977	687.1	59,922	0.17
2500- 3749	624.0	2642	1625.5	106,080	0.17
3750- 4999	827.6	2397	1956.0	140,694	0.17
5000- 7499	1520.2	2531	3793.7	258,437	0.17
7500- 9999	2353.3	1432	3322.7	635,384	0.27
10000-12499	2958.6	973	2838.4	1,094,689	0.37
12500-14999	4708.8	449	2084.7	1,742,248	0.37
15000-17499	5231.0	193	995.5	2,458,582	0.47
17500-19999	7096.5	59	412.8	3,335,338	0.47
20000-plus	9080.9	26	232.8	5,630,135	0.62
Totals	1354.4	13,306	18021.0	$ 374,178	$0.275

NOTES

[1] These data are taken from the "1978 Joint Association Survey on Drilling Costs," published by the American Petroleum Institute, February, 1980.

[2a] See Table 1A.

[2b] See Table 1A.

[3] In 1978, according to "U.S. Crude Oil and Natural Gas Reserves," the 1978 Annual Report published by the Department of Energy, September, 1980, 18,021.0 Bcf of new gas reserves were reported. Since our imputed total 18,287.3 , we have adjusted the reserve numbers downward by a factor of 1.4 percent.

TABLE 1D 1977

Depth[1]	MMcf/Well[2a]	# Wells[1]	Reserves(Bcf)[3]	Cost/Well[1]	Cost/Mcf[2b]
0- 1249	154.6	518	80.1	$ 23,195	$0.15
1250- 2499	334.6	1951	652.8	50,193	0.15
2500- 3749	630.3	2173	1369.6	94,546	0.15
3750- 4999	802.0	1843	1478.1	120,300	0.15
5000- 7499	1573.1	2209	3475.0	235,963	0.15
7500- 9999	2026.3	1355	2745.6	506,563	0.25
10000-12499	2587.3	854	2209.6	905,556	0.35
12500-14999	4149.5	367	1522.9	1,452,335	0.35
15000-17499	4800.0	124	595.2	2,159,999	0.45
17500-19999	6458.0	58	374.6	2,906,100	0.45
20000-plus	6889.5	27	186.0	4,133,698	0.60
Totals	1272.2	11479	14603.0	$ 313,537	$0.245

NOTES

[1] These data are taken from the "1977 Joint Association Survey on Drilling Costs," published by the American Petroleum Institute, February, 1979.

[2a] See Table 1A.

[2b] See Table 1A.

[3] In 1977, according to "U.S. Crude Oil and Natural Gas Reserves," the 1977 Annual Report published by the Department of Energy, February, 1980, 14,603.0 Bcf of new gas reserves were reported. Since our imputed total amounts to 14,693.0 Bcf, we have not adjusted the reserve numbers.

Based on this analysis of drilling and reserve findings, we can assume that approximately 30 to 35 percent of natural gas reserves reported as discoveries in 1982, 1983 and 1984 will be located at depths between 10,000 and 15,000 feet. To calculate the cost to consumers of an increase in price above the current lawful price, we need to know how much gas is discovered each year, how fast such reserves are produced as well as how much of the reserves are found in the "intermediate" zone.

If we assume that the annual new reserve additions range between 15 Tcf and 20 Tcf over the 1982-1984 period[10], then based on our assumption that 30 to 35 percent of new discoveries are in the 10,000 to 15,000 foot depth range, between 4.5 Tcf and 7 Tcf could be discovered in the "intermediate-deep" zone. Assuming a production life of 7 years (many fields are being produced today over 5 years), we can project the following production profile for new "intermediate-deep" natural gas:[11]

Estimated Yearly Production of New
"Intermediate-Deep" Gas

Year	15 Tcf Rate	20 Tcf Rate
1982	643 Bcf	1000 Bcf
1983	1286	2000
1984	1929	3000

According to the FERC, on January 1, 1982 the price for Sec. 103 natural gas was $2.572 per Mcf. Since this category of gas escalates with the inflation rate, we have calculated the following average yearly prices for natural gas under Sec. 103 (assuming an 8 percent annual rate of inflation) and at levels 50% and 100% higher than the Sec. 103 price.

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[10] This is a reasonable assumption in view of the additions reported over the past four years:

1977	14.6 Tcf
1978	18.0 Tcf
1979	14.7 Tcf
1980	15.0 Tcf

Range of Price Levels for "Intermediate Deep"
Natural Gas

Year	NGPA (Sec.103)	150% of Sec. 103	200% of Sec.103
1982	$2.675/Mcf	$4.013/Mcf	$5.350/Mcf
1983	2.889	4.333	5.780
1984	3.120	4.680	6.240

Multiplying the annual production figures by the different price schedules, we can arrive at the following range of costs over the three-year period:

RANGE OF COSTS FOR VARIOUS PRICING
SCHEDULES (in billions $)

Year	NGPA	150%	200%
1982	$1.720 - $2.675	$2.580 - $4.013	$3.440 - $5.350
1983	3.715 - 5.778	5.572 - 8.666	7.433 - 11.560
1984	6.018 - 9.360	9.028 - 14.040	12.037 - 18.720
Total	$11.453 - $17.813	$17.180 - $26.719	$22.910 - $35.630

DIFFERENCES BETWEEN NGPA AND POSSIBLE
FERC INCREASES
(in billions of $)

	NGPA vs. 150%		NGPA vs. 200%
1982	$0.860 - $1.338	1982	$1.720 - $2.675
1983	1.857 - 2.888	1983	3.715 - 5.778
1984	3.010 - 4.680	1984	6.018 - 9.360
Total	$5.727 - $8.906	Total	$11.453 - $17.813

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[11] If the production life of these reserves is shorter, then more reserves will be produced in the three year period, thereby increasing consumer costs. In our view the 7 year reserve/production ratio is both reasonable and conservative.

To calculate the average cost to gas using and non-gas using families, we must recognize that approximately 25% of the nation's gas consumption is used in residences. The remainder is consumed by industry, commercial buildings and by electric utilities. These businesses usually pass through their higher gas costs to consumers in the form of higher prices for their goods and services. The following tables, therefore, show the estimated new production from the 10,000 to 15,000 foot gas category allocated to residential and non-residential uses:

Allocation Based on Finding Rate
of 15 Tcf per Year (in Bcf)

Year	Residential	Non-Residential
1982	161	482
1983	322	964
1984	482	1447

Allocation Based on Finding Rate
of 20 Tcf per Year (in Bcf)

Year	Residential	Non-Residential
1982	250	750
1983	500	1500
1984	750	2250

Consumer Cost Under a Pricing Schedule
150% of the Sec. 103 Price (in billions $)

	Based on 15 Tcf			Based on 20 Tcf	
Year	Resid.	Non-Resid.	Year	Resid.	Non-Resid.
1982	$0.215	$0.645	1982	$0.335	$1.003
1983	.464	1.393	1983	.722	2.166
1984	.753	2.257	1984	1.170	3.510
Total	$1.432	$4.295	Total	$2.227	$6.679

Thus, if the FERC allows gas produced from 10,000 to 15,000 foot depths to receive 150% of the Sec. 103 price, residential costs could increase by between $1.432 billion and $2.227 billion, while non-residential costs could increase by between $4.295 billion and $6.679 billion. Under this pricing scenario, the average gas-using family would have to pay added costs of between $94 to $147 over the three year period -- $33 to $52 in direct gas costs and $61 to $95 in indirect costs.

Consumer Cost Under a Pricing Schedule
200% of the Sec. 103 Price (in billions $)

Based on 15 Tcf			Based on 20 Tcf		
Year	Resid.	Non-Resid.	Year	Resid.	Non-Resid.
1982	$0.430	$1.290	1982	$0.669	$2.006
1983	.929	2.786	1983	1.445	4.333
1984	1.505	4.513	1984	2.340	7.020
Total	$2.864	$8.589	Total	$4.454	$13.359

Thus, if the FERC allows gas produced from 10,000 to 15,000 foot depths to receive 200% of the Sec. 103 price, residential costs could increase by between $2.864 billion and $4.454 billion, while non-residential costs could increase by between $8.589 billion and $13.359 billion. Under this pricing scenario, the average gas-using family would have to pay added costs of between $190 to $295 over the three year period -- $67 to $104 in direct gas costs and $123 to $191 in indirect costs.[12]

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[12] The calculations assume 43 million residential gas-using households and 70 million American families.

OTHER ECONOMIC COSTS

While it is expected that the average American consumer will end up paying for any increase allowed by the FERC, many of the initial increases will be borne by industrial, commercial and electric utility users who will then try to pass on the increases to their customers. To calculate the initial costs to industrial and other users, we assume a level of consumption based on historical usage and the price schedules detailed above.

Sector[13]	Usage	% of U.S. Production
Residential	5 Tcf	25%
Industrial	6 Tcf	30%
Commercial	2.5 Tcf	12.5%
Industry[13]		
Chemicals	600 Bcf	3 %
Iron & Steel	550 Bcf	2.75%
Paper	260 Bcf	1.3%
Glass	170 Bcf	0.9%
State or Region[13]		
California	1.7 Tcf	8.5%
Illinois	1.1 Tcf	5.5%
Ohio	0.9 Tcf	4.5%
Penn.	0.7 Tcf	3.5%
New York	0.6 Tcf	3.0%
Indiana	0.5 Tcf	2.5%
New England	0.3 Tcf	1.5%
Georgia	0.3 Tcf	1.5%
Florida	0.23 Tcf	1.0%
Arkansas	0.2 Tcf	1.15%

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[13] *Gas Facts*, American Gas Association, 1980.

Industrial users, states and other consumers are allocated a portion of the supply of new gas from the 10,000 to 15,000 foot category based on their U.S. consumption. This volume of gas is then multiplied by the difference between the NGPA Sec. 103 price and the possible increases to that price comtemplated by the FERC. Because we have assumed an annual finding rate that ranges between 15 Tcf and 20 Tcf, we will obtain a cost of gas to these sectors that reflects the finding rate range.

The Summary at the beginning of this paper contains the results of those calculations.

PRODUCERS HAVE SUFFICIENT INCENTIVE

To determine whether or not producers have sufficient "incentive" to drill for gas at depths between 10,000 and 15,000 feet under the current law, it is useful to look at the record. The table below details the number of wells drilled in three major depth categories.

DRILLING BY DEPTH (# of Wells)

Year	0 - 9,999'	10,000' - 14,999'	15,000'+	Total
1977	10,049	1221	209	11,479
1978	11,606	1422	278	13,306
1979	12,205	1581	293	14,079
1980	13,106	1750	396	15,225

Between 1977 and 1980 successful gas wells drilled increased by nearly 33 percent. Wells drilled below 15,000 feet increased by almost 77%; wells drilled between 10,000 feet and 15,000 feet increased by 43%, but wells between 0 and 10,000 feet increased only 30%. Clearly, producers chose to drill deeper wells, not just below 15,000 feet for which the price is decontrolled, but for the 10,000 to 15,000 depth.

Moreover, over the four-year period, the percentage of wells drilled below 15,000 feet has increased relative to shallower wells. The table below sets out these changes:

Gas Wells Drilled as a % of Total Gas Wells

Year	0-9,999	10,000 - 14,999	15,000+
1977	87.5%	10.6%	1.8%
1978	87.2	10.7	2.1
1979	86.7	11.2	2.1
1980	86.1	11.5	2.4

Finally, if our estimating method is appropriate, then it would appear that the finding rate for shallow wells has been falling dramatically, while the finding rates for the deeper wells have remained stable. The following table illustrates this point:

Estimated Finding Rate Per Foot Drilled (Mcf)

YEAR	0-9,999	10,000 - 14,999	15,000+
1977	221	259	317
1978	227	294	347
1979	152	254	388
1980	132	245	369

All of these data suggest that producers are willing to bear the risks of drilling to the intermediate depths between 10,000 and 15,000 feet without additional incentives.

NEW YORK, FRIDAY, MARCH 12, 1982 155TH YEAR

Lower Residual Fuel Oil Prices Threaten Natural Gas Industry

By KEVIN COMMINS
Journal of Commerce Staff

The natural gas industry may prove to be the most significant loser as a result of the worldwide decline in oil prices, some analysts contend.

Reductions in the price of residual fuel oil, a direct competitor to natural gas, will tend to keep gas prices down, depress gas demand, and will likely lead to a scale-back in major gas production projects.

"The drop in crude oil prices doesn't bode well for the natural gas industry," said Arnold Safer, president of the Energy Futures Group in Bethesda, Md.

The increasingly gloomy outlook for the industry could have an adverse effect on investment for liquefied natural gas projects, gas pipeline construction, and exploration, analysts said.

Politically, the reduction in the price gap between gas and oil will weaken the natural gas industry's position that accelerated decontrol of gas prices is needed to avoid precipitious price hikes when controls are removed in 1985.

The change in the economics of oil and gas marks a major break from the immediate past when many thought natural gas would play a growing role in reducing the nation's oil use.

While no one claims there will be a massive switch away from natural gas, it's clear that in certain markets residual fuel oil is regaining ground that it lost to natural gas over the past few years.

Because of the complex regulations governing natural gas prices, competition from oil will be most keenly felt in large-scale industrial plants now burning gas, but which have the capability of burning oil.

While no one claims there will be a massive switch away from natural gas, it's clear that in certain markets residual fuel oil is regaining ground that it lost to natural gas over the past few years.

Under incremental pricing arrangements, the natural gas costs of large industrial users are already close to fuel oil on a Btu basis. With the fall in oil prices, some of these companies are considering shifting from gas to oil.

Harold Hagen, an energy conservation consultant with National Energy Services, said that his organization recently has recommended to some companies that they switch from natural gas to residual fuel oil.

Mr. Hagen declined to say in which areas residual is gaining but he affirmed, "there has been a significant shift" in favor of residual fuel oil.

Even if large industrial plants continue to burn gas, declines in the price of fuel oil will probably force gas utilities to lower their rates in order to stay competitive with oil, analysts forecast.

In the past year, prices in New York Harbor for No. 6 fuel oil, 1 percent sulfur, have declined from around $38 a barrel to $30, a larger drop than either crude oil or other oil products have experienced. Analysts predict residual prices will decline even further as crude oil prices continue to fall in the coming weeks. Due to the recession and conversion to other fuels, demand for residual fuel oil is down about 30 percent from the same period last year, the steepest drop of any oil product.

Consequently, analysts predict residual fuel oil will bear the brunt of upcoming oil product price decreases, perhaps dropping as low as $25.

In the short term, lower residual fuel prices will lessen the incentive to burn natural gas and will lower the upper limit on gas prices in certain geographic markets.

Because natural gas prices are subject to a wide variety of regulations, there will be many regional exceptions to the general trends. Nonetheless, there is wide agreement that falling residual oil prices will have a significant negative effect on the natural gas industry.

Sources emphasize that the fall in oil prices will not stimulate conversions to oil for residential heating purposes, although conversions from oil to gas likely will decrease.

In addition, its unlikely that utilities will shift from gas to oil because the price of gas sold to utilities is controlled well below the market price for residual fuel oil.

According to the latest figures from the Department of Energy, natural gas costs to utilities were $3 per million BTUs, compared to a cost of $5.11 per million BTUs for residual fuel oil.

Looking at the gas industry from a long-range perspective, analysts agree that consumption of natural gas will be limited by demand, not by the amount of gas produced.

"The volume of gas produced is going to be set by the market, not by supply," predicted Dale Steffes of Planning and Forecasting Consultants in Houston.

Demand for natural gas "will do well to hold its own" against other fuels, projected Ron Brone a gas industry analyst for Kidder Peabody & Co.

Renewed price competition from fuel oil puts the gas industry in the position of having to lower prices to stimulate demand or to accept a smaller market share at higher prices.

Last year, overall demand for natural gas dropped 1.4 percent to 19.8 trillion cubic feet, the first decline

For the next few years, natural gas demand will be flat or show only moderate growth.

Dale Steffes, one of the few analysts to predict the recent fall in crude oil prices, said the industry "will be able to sell a little bit more gas," but feels competition from oil prices will keep industry profits below desired levels.

The prospect of lackluster demand and pricing constraints in the gas industry will discourage new production from deep wells and remote geographical areas.

Analysts concur that gas production from deep wells will no longer be able to command prices as high as $9 per thousand cubic feet.

"There will be a shakeout in deep gas," noted Mr. Steffes.

In addition, projects such as the Alaska gas pipeline and Argentina's plan to export substantial amounts of liquefied natural gas are becoming economically questionable.

The industry "won't be able to bring on massive gas projects at the prices they need," contended Dr. Safer.

THE NEW YORK TIMES, TUESDAY, FEBRUARY 23, 1982

Proposal to Lift Gas Price to Be Studied

By ROBERT D. HERSHEY Jr.

Special to The New York Times

WASHINGTON, Feb. 22 — The Federal Energy Regulatory Commission is expected to take up at a meeting on March 10 a proposal for raising the price of "old" natural gas by perhaps as much as two-thirds.

Such gas, which was committed to interstate pipelines before April 1977, is now held to an average price of about $1 per 1,000 cubic feet, less than half the average price of all gas in the nation's supply system.

The commission chairman, Charles M. Butler 3d, installed at the independent agency by President Reagan last year, has long entertained the idea of deregulating gas prices by administrative action as a partial substitute for amending the Natural Gas Policy Act of 1978.

This law freed relatively small amounts of gas from Federal price restrictions and established a formula under which virtually all other gas would gradually rise over several years by a factor somewhat in excess of inflation. In addition, all gas discovered since April 1977 would be allowed to fetch open-market prices on Jan. 1, 1985.

But because of the doubling of oil prices in the wake of the revolution in Iran, the prices of oil and gas are unlikely to reach the rough equivalency projected for them in 1985.

Back-Door Decontrol

The Reagan Administration has hoped to win Congressional approval for speeding up gas price decontrol, and making it more comprehensive. But prospects for this have dimmed markedly in the past several weeks, in part because of severe winter weather and the continuing economic slump. For this reason, what critics call "backdoor" decontrol by the commission is assuming increasing importance.

It is a matter of dispute just how much authority the commission has to raise gas prices on its own but, according to an internal position paper obtained by a reporter, the commission's lawyers have declared that its powers appear fully sufficient to raise the price of old gas to virtually any level, provided they are "just and reasonable" under the Natural Gas Act of 1938. The 1978 legislation largely superseded the 1938 act but retained the just and reasonable standard.

So-called old gas, accounting for between one-third and one-half of today's supplies, is the most tightly controlled of the more than two dozen categories of gas created by the Natural Gas Policy Act of 1978. Some of it sells for as little as 26 cents per 1,000 cubic feet, a price derived largely from previous rulings tying it to the cost of production.

According to the commission document, written by Philip M. Marston of its Office of Regulatory Analysis, the agency could unilaterally raise such rates and more than likely be able to sustain them in the face of the inevitable challenges of consumer groups and retail distributors, two of the main opponents of faster decontrol.

"While it is true that the phrase 'just and reasonable' rates has come to be loosely equated with 'cost-based' rates, the reviewing courts in producer rate cases have consistently stated that the commission has the authority, if not the duty, to factor noncost elements into its calculations," the commission lawyers asserted. "There has been more than one 'invitation' from the Supreme Court to base gas producer rates on noncost policy considerations."

Gross Market Distortions

The commission staff and others who seek faster decontrol of gas, the only fuel that remains under Federal price restrictions, argue that the gas market has become grossly distorted by the longstanding regulations. One of the results is that interstate pipelines pay widely varying prices for their gas, depending largely on how much access to inexpensive old gas they have.

One of the main ways to deal with what they regard as this 'market-ordering" problem would be modify or abolish what is called "vintaging" — establishing a price for gas according to the year in which it enters the pipeline.

"Indeed, there is substantial legal authority for the commission to eliminate Natural Gas Act vintaging entirely by setting ceiling prices for all flowing interstate gas directly at that level," the commission document states.

The commission's lawyers noted that its policy began to shift away from vintaging, which the agency called an "anachronism," in 1972. By 1974, it appeared that the commission was ready to eliminate future vintaging and in doing so, according to the document, it would "correctly" peg the national price of gas "to the replacement cost of the commodity."

Mr. Marston's background paper also noted that Congress expressly authorized the commission to raise the prices of old gas so long as the increased prices was just and reasonable.

The lawyers added that the elimination of vintaging could be done in at least two ways: gradually by allowing rollover contracts to be renegotiated or, more directly, by simply resetting the just and reasonable level for all older vintages at a higher level, perhaps at a base rate of $1.63 per 1,000 cubic feet.

The commission is expected to announce its proposal at the meeting next month and put it out for an extended period of comment.

The Washington Post

1982, The Washington Post Company

MONDAY, FEBRUARY 22, 1982

Higher in Areas Approximately 75 miles From District of Columbia (See Box on A2)

C. M. BUTLER
... wants to avoid market distortions

Agency Seeks Eased Control Of Gas Prices

By John M. Berry
Washington Post Staff Writer

The White House and Congress have pretty well shelved the decontrolling of natural gas prices in this election year, but the head of the federal gas regulatory agency is now seeking—on his own—to relax large segments of the controls.

At the instigation of its new chairman, C. M. (Mike) Butler, the Federal Energy Regulatory Commission shortly will propose a new rule that would lift the average price of all gas now flowing into the national distribution system by about a third.

The rule is a long way from being being final, and even if FERC finally issues it, consumer groups will almost surely move to delay and defeat it in court. If put in place, it would cost consumers about $10 billion more for gas each year.

This rule would affect "old" gas, discovered before April, 1977. Old gas now makes up more than half of the gas in the system. Its average price likely would rise about two-thirds.

FERC also has proposed, with Reagan appointee Butler as the inspiration, a rule that would partially free the price of one kind of new gas: "near-deep" gas found between 10,000 and 15,000 feet underground.

Gas found deeper than that already is free of controls, on the theory that producers need a high price as an incentive to find it.

Congress partially decontrolled natural gas in the Carter administration, through the Natural Gas Policy Act of 1978. The theory was that it made no sense to hold gas prices down while oil and other energy prices were rising, that this

See GAS, A8, Col. 1

Gas Regulatory Agency Chief Trying to Decontrol Prices Himself

GAS, From A1

would create artificial distortions in the marketplace, and that higher gas prices would provide incentives both to cut consumption and to increase production, lessening dependence on imported oil.

The NGPA was a compromise between those who wanted to lift controls entirely and those who wanted to preserve them on grounds that producers already were doing nicely and consumers ought not have to pay any more than before.

Under the act, new gas prices now are generally allowed to rise 4 percent more than inflation each year, and in 1985 they will be set totally free. Old gas prices are held about to the inflation rate now, and the law would continue this indefinitely. As old wells are depleted, however, this gas will be a shrinking share of total production.

President Reagan came to office pledged to speed up this compromise process of decontrol but has submitted no bill to do so, even though his own Cabinet council on natural resources has urged him to.

One reason he has hesitated is a lack of enthusiasm for further decontrol in Congress, even in the Republican Senate. The recession has been a deterrent, as are the forthcoming elections. And producers are not hurting. Average gas prices have nearly doubled since passage of the NGPA three years ago; they have gone up more than seven-fold since 1973.

Chairman James A. McClure (R-Idaho) of the Senate Energy Committee told the White House earlier this year it would have to send a bill to Congress before last week's recess to have any hope of passage this year. No bill was forthcoming.

A major oil company's expert said the industry had hoped Reagan would propose decontrol in his January State of the Union address or shortly thereafter. "Now we are regrouping for next year," he said.

At FERC, however, Butler is busily at work, and not simply in the name of producers, but to avoid what he says will otherwise be enormous distortions of the market when price controls come off new gas, but not old, in 1985.

First will come a huge one-time-only price spurt as new gas leaps to the so-called free market level. Then will come confusion, Butler says. Some gas prices will be quite high, some relatively low, and competing pipeline companies will have access to the high-priced and low-priced gas in widely varying amounts, depending on their suppliers.

Butler and others in favor of speeding up decontrol refer to this as a "market ordering" problem and say that those who are resisting decontrol have not faced up to it.

The chairman argues that ultimately, under the old-new two-tier pricing system, prices for new gas will be bid up well above the free market level, and that the average price of new gas and old will be about the same as if no controls remained.

"In our analysis, the consumer obtains no benefit from continuing price controls on part of the gas," he said.

Distributing companies with access to comfortable amounts of lower-cost old gas could afford to pay very high prices for the remaining amounts of new gas that they needed; their average price would still be within bounds.

But other companies might then end up less well off, Butler says. A pipeline with relatively little old gas could find itself forced to pay such a high price for so much new gas that it would begin to lose customers. Some users, particularly industrial customers able to use oil as an alternative fuel, would begin to switch because oil would be cheaper.

This multiple-price problem would be compounded by clauses in many current contracts under which, as soon as one producer in a region obtains a higher price, all producers there become entitled to it.

Butler said FERC has no power to deal with these contract clauses, which is one reason he wants Congress to face up to the decontrol issue. Since gas prices will be equally high under NGPA or full decontrol, in his opinion, Butler said, "What you have on your hands is an exercise in political damage control."

Since neither the president nor Congress seems anxious to plunge ahead, Butler is pressing his commission to increase prices of certain categories of gas under authority he says FERC has through the NGPA.

Last month, FERC published a proposed rule under which newly discovered gas found onshore and at depths between 10,000 and 15,000 feet could be sold for an "incentive" price equal to 150 percent of the price for most other new gas—about $4.50 per thousand cubic feet (mcf) instead of $3. NGPA says incentive pricing is in order if there are "extraordinary costs and risks" associated with finding and producing gas.

Butler thinks the existing rules are distorting drilling patterns because wells of less than 10,000 feet are relatively cheap to drill, while gas from wells deeper than 15,000 feet is uncontrolled and bringing up to $10 per mcf.

Gas in between has nothing comparable going for it. But Butler acknowledged that FERC must build a record in the current proceeding showing conclusively that an incentive price is needed.

Critics, such as Edwin Rothschild of Energy Action, an organization seeking to hold down energy prices, point to the great increase in drilling activity since passage of NGPA as ample evidence that no new incentives are necessary.

FERC also has the power under NGPA to increase the price of gas found before 1977 if it concludes that doing so is "just and reasonable."

That phrase comes from earlier legislation and was the key test of gas price control decisions made for years by the Federal Power Commission, the predecessor to FERC. Essentially, the FPC always took "just and reasonable" to be somehow related to the cost of finding and producing the gas, and federal courts upheld such a definition.

Soon FERC will propose a rule covering old gas that likely would have the effect of raising all of it to the highest price being paid for any of it. At present, some old gas sells for as little as about 25 cents per mcf, with the average at about $1.20.

Butler acknowledged that these two rulemakings are "testing the frontiers of the commission's authority." But he is going ahead because he sees a "substantial opportunity to rationalize the market by raising the price of flowing gas."

With the rules changes formally proposed, "the commission can begin collecting numbers under the court-blessed methodology [fixed by the FPC] and see what we come up with.... If the facts bear out my theory, the commission might have the opportunity to eliminate much of that old gas cushion" that will allow some pipelines to pay so much more for decontrolled gas after 1985 under current law, Butler said.

Some intrastate pipelines, having no such old gas cushion because the prices they could pay were not regulated until passage of NGPA, are already complaining that they cannot compete with interstate pipelines for new gas. Some in Texas recently had to curtail shipments because they could not afford to buy gas available to them, they said.

If Butler and other administration analysts are right in saying users will get no benefit from controls after 1985, then continuing them would hardly make sense.

However, the rigidities of the natural gas marketplace are such—gas is the only commodity of any consequence to which a transportation company takes title when it picks it up and then sells it to someone else, a distribution company, for resale—that average gas prices might still remain below the full-decontrol level, some energy economists point out.

In that case, consumers still would benefit. Presumably this, too, will be argued in these FERC proceedings Butler has touched off.

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TUESDAY, FEBRUARY 9, 1982

THE WALL STREET JOURNAL.

Agency Speeds Gas Decontrol, Stirring Fight

By ANDY PASZTOR
Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON — In ordinary times, Charles M. Butler would be just another obscure White House appointee, and the little-known federal agency he heads would rewrite dozens of arcane rules without any public fanfare.

But the 38-year-old chairman of the Federal Energy Regulatory Commission appears determined to have his agency take the lead in authorizing billions of dollars of higher natural-gas prices for homeowners and industries. In doing so, he seems ready to make his five-member commission, an independent arm of the Energy Department, a political lightning rod on the issue of decontrolling natural-gas prices.

"Any honest debate over natural-gas policy," the Texas attorney told a utility group recently, "must begin with the recognition that decades of price controls have created a problem for which there is no easy solution." Shying away from the controversy by waiting for the White House and Congress to decide whether to speed decontrol, he added, "is likely to create a game in which many will lose and few will win."

Mr. Butler, a free-market advocate, argues that higher natural-gas prices will spur domestic production and prevent future shortages or wide regional disparities.

Few people question the commission's authority to unilaterally loosen price controls on a big chunk of all the natural gas sold in the U.S. But consumer groups and other critics contend that Mr. Butler, formerly an aide to Republican Sen. John Tower of Texas, is going too far and too fast to help producer interests.

Questionable Strategy

The commission's strategy, these critics argue, amounts to "backdoor deregulation" of natural-gas prices, calculated to skirt the will of Congress while insulating the White House from the uproar likely to result from higher prices. Some opponents of decontrol see Mr. Butler's actions as tacit admission that Mr. Reagan's advisers might want to avoid a legislative fight over the issue.

Some White House aides worry, though, that the commission's moves may backfire. "He's playing quite a risky game," says an administration policy maker. "The decision to do whatever can be done administratively may break up the logjam, but it also may focus a lot of acrimony on the commission."

Aides say Mr. Butler has been too busy recently to grant interviews. But since last fall, he has appeared regularly before sym-

Last month Mr. Butler predicted that "longstanding and entrenched opposition" in Congress to any form of gas decontrol could dissuade the White House from introducing legislation to confront the issue head-on. Even if a bill eventually is submitted, he estimated it would have only a "50-50 chance" of being adopted this year.

So Mr. Butler and the rest of the commission majority appointed by President Reagan are quietly finding loopholes in the current law that would allow producers, in some cases, to quickly double the maximum prices they can charge consumers.

Targets of Decontrol

In the middle of this winter's intense coldwave, the commission nearly doubled, to more than $5 per 1,000 cubic feet, the price for natural gas produced from deep offshore wells. Mr. Butler also wants to raise substantially the price lid for gas produced from certain onshore wells. Together, some experts estimate, these two actions would amount to decontrolling at least one-quarter of all the gas sold in the U.S. and a much larger share of total gas reserves.

More recently, Mr. Butler has telegraphed his wish to loosen controls on even larger volumes of so-called old gas that was sold through low-cost, long-term contracts before the 1978 price-control law.

Mr. Butler also has advocated easing price controls without necessarily determining beforehand the amount of gas affected and the potential extra cost to consumers. "We simply don't have any estimate of those things at this point," a commission spokeswoman says.

Naturally, many producers and gas-transmission companies favor the commission's initiatives, but the proposed increases face opposition from utilities, numerous state regulators and consumer groups.

The commission "is rushing headlong to decontrol gas prices without collecting adequate information," complains Edwin Rothschild, director of Energy Action, a consumer organization. "It's one of the most disastrous plans ever conceived against consumers."

Energy Action's preliminary estimate is that the proposals could raise industrial gas costs alone by more than $5 billion over the next three years. The group figures that heating bills could climb by more than $50 a year for the more than half of all U.S. homes heated by natural gas. The cost would be substantially higher if the old long-term contracts are revised.

Commission officials maintain that their efforts to loosen price controls will benefit consumers in the long run. But some members of Congress want more assurances.

Indiana Rep. Philip R. Sharp, the Democrat who heads the House energy subcommittee that would consider any decontrol legislation, recently complained to Mr. Butler about what Mr. Sharp called the commission's "inadequate knowledge" of the potential effect of its policies on consumers.

BusinessWeek
February 15, 1982

RESOURCES

A back-door approach to raising gas prices

A year of wavering by the Reagan Administration over its proposal to accelerate the decontrol of natural gas prices has left the nation's gas producers frustrated, consumers cautious, and even the White House's strongest congressional allies doubtful of passage this year. But a push for higher prices is already well under way through a series of actions by the government's regulator of gas prices, the Federal Energy Regulatory Commission, that by midyear could double the price of as much as 40% of the nation's gas. Since Dec. 30, FERC, led by a pro-Reagan majority of its five commissioners, has:

- Proposed that so-called "near-deep" gas, situated from 10,000 ft. to 15,000 ft. below the surface, be given a special incentive price of approximately $3.85 per mcf to encourage drilling. That category of gas, currently priced at about $2.80 per mcf accounts for about 10% of the nation's 19 trillion cu. ft. of annual consumption, according to the American Petroleum Institute.
- Decided not to appeal a ruling by a federal appeals court in New Orleans that removed from FERC's jurisdiction gas produced by interstate pipelines for their own customers. FERC officials estimate that will mean price increases of $1 to $3 per mcf depending on the type of gas. The ruling affects only 5% of the nation's gas consumption, but it could give companies—including Consolidated Natural Gas Co. and El Paso Natural Gas Co.—a significant boost.
- Set tougher standards in attempts by cities and gas-distribution companies to overturn contracts signed by pipelines for high-priced, hard-to-produce gas.

FERC is also expected to approve higher prices for gas produced from offshore wells in water 300 ft. or deeper. It is reviewing proposals to give gas producers extra revenue to compensate for the costs of gathering gas and compressing it to move through pipelines. And it is considering proposing raising prices to as high as $4 per mcf for most gas produced before April, 1977. That so-called "old gas," which accounts for an estimated 25% of all gas now consumed, is now priced as low as 60¢ per mcf.

FERC Chairman Charles M. Butler III says that the commission is taking action because he feels any legislation to speed decontrol has "only a 50-50 chance because of long-standing ideological opposition." Butler, a former aide to Senator John Tower (R-Tex.), has ordered studies to determine the legal and economic implications of increasing prices administratively. "The commission can probably find the latitude," according to Tower, "but any solution would only be temporary."

Outbid. Butler acknowledges, for instance, that FERC is unable to change the price of intrastate gas—gas produced and sold within a state's borders—which makes up some 10% to 15% of all gas sales, and that FERC's efforts will still leave most prices below deregulated levels. But by moving ahead with proposals for at least some price increases, he says, FERC can help stave off regional gas-supply problems that loom because of price disparities. Pipeline companies with access to large volumes of cheap, price-controlled gas have been bidding the price of new, decontrolled gas up to $10 per mcf—roughly the equivalent of $60-a-bbl. oil. That has had little impact on the delivered price to their customers. But companies without old-gas supplies, primarily intrastate pipelines in Louisiana and Texas, have been outbid.

Even without decontrol, new rules could raise the cost of 40% of U. S. gas

Quick action is needed, according to Butler, to deprive pipeline companies of that so-called "cushion" of lower-priced gas and to guard against an expected 70% increase in gas prices in 1985. But consumer groups are worried about the impact today. The Energy Action Educational Foundation, for instance, argues that FERC's action on "near-deep" gas alone will add as much as $18 billion annually to the $40 billion that is now paid for gas in the U. S.

Paradoxically, FERC's strategy is exacerbating the existing split within the gas industry. Independent producers, who are fearful that Congress would add a windfall profits tax to any decontrol legislation, are applauding the FERC initiative. "I'd sure prefer this route to excise taxes," says L. Frank Pitts, chairman of Pitts Oil Co.

But while some major oil companies are seeking FERC's help themselves—Sun Co., for instance, wants higher gas prices for new offshore wells drilled in old fields—most majors are afraid that the likely result of FERC's action will be lengthy legal challenges. A similar move in 1975 by the Federal Power Commission, FERC's predecessor, took 3½ years to resolve.

Yet, according to Sanford E. McCormick, president of McCormick Oil & Gas Co., gas producers "can probably still get an awful lot of what they want without a

THE NEW YORK TIMES, SUNDAY, MARCH 22, 1981

COMMENT

Backdoor Decontrol

By EDWIN ROTHSCHILD

NOW that the Reagan Administration has decontrolled oil prices, it has begun to consider the more politically troublesome and economically volatile issue of natural gas deregulation. Even though cardidate Reagan campaigned on a platform calling for immediate decontrol of natural gas prices, it is becoming more and more likely that President Reagan will not ask Congress to vote on the issue. Instead, he will probably embark on what some have called "the backdoor approach" to decontrol, an approach that requires no legislated change in the current law, the Natural Gas Policy Act of 1978.

Through the Federal Energy Regulatory Commission, which administers the gas act, the Administration can raise the average price for all gas by allowing dramatic increases in the price for certain categories of gas. It was precisely this path that David Stockman laid out to a gas industry meeting before he became director of the Office of Management and Budget.

"There's a lot of discretion available to the commission [in] devising additional categories of high-cost or incentive gas that could for all practical purposes be deregulated," Mr. Stockman said. Moreover, in the opinion of Danny Boggs, the chief of the transition team for the energy commission who is now a White House aide, the commission can even raise the price of gas flowing under old (pre-1977) contracts.

Such views make the natural gas industry analysts on Wall Street very, very bullish. "The Reagan Administration's most realistic option is to provide incentive pricing," says one of their reports, "for categories where it is needed — through the F.E.R.C. as provided in the N.G.P.A. We believe this approach can achieve many of the same results as can accelerated decontrol, and yet avoid many of the [political] risks associated with the latter."

For President Reagan, the advantages of administrative, or backdoor decontrol are straightforward:

•No bitter battle in Congress to arouse public outrage;

•The opportunity for Congressional allies to deny responsibility for their constituents' suddenly higher natural gas bills;

•The transfer of the gas pricing issue from a highly charged arena closely watched by the media to a complex and leaden regulatory process understood by few and ignored by most;

•The chance to take credit for protecting the economy while actually damaging it;

•And finally, pacifying the gas industry by providing producers with decontrolled prices for "new" gas and pipeline and distribution companies with price controls on "old" gas.

The cost to America's economy, however, will be devastating. The continuation of strict price controls through 1985 would increase average gas prices by at least 20 percent yearly, but the accelerated approach would impose a whopping 50 percent yearly.

For the average worker, whose earnings have already been eaten up by higher energy bills, decontrol means he would have to work three weeks instead of one week to pay for the gas he uses in his home.

American industry, which consumes 40 percent of the nation's gas, would be hit for as much as $234 billion between now and 1985. This compares with $34 billion for the period 1976-1980.

Producers and Administration officials continue to publicize the myth that decontrol will increase drilling and production, and that producers will choose to invest in oil rather than gas, if gas prices are not raised to the artificially high levels imposed by the Organization of Petroleum Exporting Countries.

But the facts — namely, the amount of money actually invested in oil and gas exploration and development — reveal a very different picture. According to Bureau of Census data, between 1974 and 1978, oil and gas producers invested more money in gas exploration and development than in oil exploration and development.

THIS was so despite the fact that natural regulated gas prices were far lower than oil prices. Why? Mainly, because the actual cost of producing gas is one-third the cost of producing oil — all of which means that profits in every dollar invested have been greater for gas than for oil.

The energy commission will probably attempt to accelerate decontrol by changing the rules governing the prices for various categories of gas. A number of consuming states, consumer and industry groups are challenging these rulings in commission proceedings and in the courts. If these challenges fail, the commission would be in a position to undermine the entire price control mechanism of the gas act. The commission would be able to create so many "incentive" categories of gas that producers would only drill for gas within those categories and leave the low-priced (although easily produced) gas for sometime in the future when gas is decontrolled.

Even though, in the short run, it is less costly to the economy than immediate decontrol, backdoor, or accelerated decontrol is really more disturbing, because it is an effort by the Reagan Administration to get total decontrol without arousing public indignation and political retribution. It is decontrol by attrition, rather than by all-out war. The end result is the same. OPEC and the international oil companies will set a cartel price for the inexpensive gas produced in America. ■

Edwin Rothschild is director of the Energy Action Educational Foundation in Washington.

Senator NICKLES. Thank you very much, Mr. Rothschild. Ms. Cincotta?

STATEMENT OF GALE CINCOTTA, CHAIRPERSON, NATIONAL PEOPLES ACTION, ACCOMPANIED BY CAROL GANOBCIK, PRESIDENT, SENIOR ACTION COALITION, AND CARL TYLER, OMAHA, NEBR.

Ms. CINCOTTA. My name is Gale Cincotta, and I am chairperson of the National People's Action, which is a coalition of over 250 community, church, and senior citizen organizations from across the country.

For the past 6 years NPA organizations have been fighting against the exorbitant prices we have to pay for heating our homes and apartments, and we have seen heating bills increase 400 percent in the last 10 years. We have seen the price of gas go up 40 percent a year since 1978, and we are here now because the oil companies want fuel bills to triple in 1 year.

I am sharing my testimony today with Carol Ganobcik of Elyria, Ohio, and Carl Tyler of Omaha, Nebr. They represent hundreds of people who were here yesterday to try and get Congress to stop back-door decontrol by FERC.

[The prepared statement of Ms. Cincotta follows:]

"BTUs"

Testimony of

GALE CINCOTTA

Executive Director
National Training & Information Center

and

Chairperson, National People's Action

My name is Gale Cincotta. I am chairperson of National People's Action (NPA), a coalition of 250 community, church and senior citizen organizations from across the country. With me today are Carol Ganobsik of Elyria, Ohio and Carl Tyler of Omaha, Nebraska. There were many people here yesterday from across the country who wanted to testify before this Senate hearing.

For the past 6 years, NPA organizations have been fighting against the exhorbitant prices we have to pay for heating our homes and apartments. We have seen heating bills increase 400% in the last 10 years. We have seen the price of gas go up 40% a year since 1978 and now we are here because the oil companies want fuel bills to triple in one year.

You might wonder why my statement is titled "BTUs". Well, the industry has linked gas to oil arguing that there should be equal costs for equal BTUs (British Thermal Units) of energy. I'd like to explain the BTU argument using other words: Beans T-bones and Us. Saying that gas should be priced equal to oil is the same as saying beans should be priced equal to T-bones because a given amount of beans, 1 pound, provides the same amount of protein as a 3 pound T-bone steak.

One pound of beans cost $.56 and 3 pounds of T-bones cost $15.00. You would say it's ridiculous to link the cost of beans to T-bones and charge $15.00 for a pound of beans. But that's what the oil companies want to do by linking the cost of gas to oil because they give equal amounts of energy. That's not only illogical and ridiculous - it's hurting thousands of people across the country who can no longer heat or eat. We don't want to pay this high price for beans or gas.

In order to understand how we have been led into this predicament we must remember what was going on in the country during the winter of 1977-78 which prompted Congress to write the Natural Gas Policy Act.

Congress was sold a bill of goods by the oil industry, which was proclaiming a severe gas shortage. Congress was being told by the oil industry that gas supplies would run out by the 1990's unless strict conservation measures were passed and unless the producers were encouraged to do more exploration and development. Under this pressure from the oil industry, Congress passed the NGPA and linked the price of gas to that of oil.

Why is the price of gas linked to oil? Basically because the producers of natural gas are the big oil companies. The oil industry owns 60% of proven U.S. gas reserves and 75% of gas production. Big Oil sold Congress on the idea that a given amount of gas which produces X amount of energy should equal a given amount of oil which produces the same amount of energy. They also sold Congress on the energy crisis and the need to conserve before our country ran out of gas.

However, once the price of gas was tied to oil, the energy crisis ended. Abundant supplies of gas were all of a sudden "found" - estimates ranging from 200 to 2000 years of supply.

Linking gas to oil is illogical, inflationary and promotes unemployment.

It is illogical because gas is far cheaper to produce than oil (1/3 of the cost). Energy costs should be based on the costs of production and development and not tied to an artificial price set by OPEC.

Linking gas to oil is inflationary because if the two are priced the same the increased cost of natural gas will cause the price of all other goods and services to increase.

And finally, linking gas to oil causes unemployment because as businesses face higher overhead costs the first to be cut are the employees.

The decontrol of natural gas is administered by FERC (Federal Energy Regulatory Commission) with 1985 being targeted as the year for total decontrol on newly discovered gas. Old gas discovered prior to 1977 will remain under controls until the reserves are depleted.

The consumers do not like what has been happening under NGPA. Our bills have skyrocketed at a rate of 40% a year, and this is with controls. Much of this is due to the greed of the producers' spending more time and effort drilling for gas below 15,000 feet because it is totally deregulated and blending this gas together with easier to find cheap gas. The producers even move their drilling rigs to hills so that they can qualify for the 15,000 foot ceiling. The result - our bills rise even higher.

These same producers who are complaining all the way to the bank are not hurting for incentives to drill for gas. The Washington Post recently ran an article which says that all of the available drilling rigs are already in use, working day and night. In other words they have enough incentives presently to find additional gas and they don't need any more incentives.

On top of that, have you looked at what the oil industry did with its excess profits from oil decontrol? The nation's 16 biggest oil companies spent twice as much of their profits from oil decontrol on buying other businesses as they did on increasing U.S. oil production. 16 oil companies had $29 billion more in financial resources in 1980 than they had in 1978 as result of higher oil prices. But these same 16 companies spent only $5 billion of that amount for increased U.S. exploration and production. 38% of the increased profits were used to acquire other corporations and expand corporations in non-petroleum areas. Occidental Petroleum bought Iowa Beef Processors, the largest beef processing plant in the country. Sohio said in a Business Week article that its biggest problem was not knowing where to invest all of its money so it bought Kennecott Copper.

Decontrol will not increase exploration and production. There has always been more than adequate incentives to drill. Even when gas prices were under strict price controls (1974-78) oil companies spent a greater percentage of their exploration and development money on gas than on oil because they realized a greater return on their dollar.

These companies are lying to the American public, lying to Congress. They want more money so they can make more acquisitions. Look at Mobil Oil -- it's a crime that this multi-billion dollar company which has purchased Montgomery Ward, Container Corporation, Golden Bear Restaurants, and Mei Foo Sun Chuen in Hong Kong (the world's largest condominium complex) is running all over the country trying to buy another oil company. People are freezing to death, losing their jobs and Mobil has a $6 billion line of credit to play with - money they made from oil decontrol, money they are suppoed to use for exploration and production.

Since President Reagan has been in office, the oil companies have been pushing for a speed up of the decontrol process. They have urged Congress to change the NGPA, saying that our prices should be doubled and tripled NOW to avoid a big price hike in 1985.

Congress has the power to change the NGPA but even though they have been under intense pressure to speed up decontrol, they have chosen to keep the existing legislation intact.

Having lost the fight in Congress for this year, these same producers are now pressuring FERC to deregulate through the Back Door, by raising various pricing categories which have been already determined by Congress.

Congress should not allow an agency - FERC - or moreover a Washington bureaucrat, Charles Butler, to change the intent of Congress as expressed in the NGPA. Congress should lock the front and back door on gas deregulation.

It is your job to set policy for this country, a policy which is of and for the people of this country, not of and for Big Oil. For too long the oil industry has been holding this nation in fear, demanding a greater share of our paychecks to finance their industry take-overs and acquisitions. We've seen it with the fictitious oil shortage. We've seen it with the windfall profits money being spent more on acquisitions than on production. We've seen it at our front door and our back door, but most of all we see it in our gas bills.

If you believe that a pound of beans and 3 pounds of T-bones should not cost the same for us then you should immediately put into action our following recommendations:

1. You, the Senate Committee on Energy and Natural Resources should not allow FERC to decontrol natural gas in anyway;

2. You, the Senate Committee on Energy and Natural Resou should kill any legislation for speed up of decontrol of natura gas;

3. You, the Senate Committee on Energy and Natural Resou should pass legislation rescinding the Natural Gas Policy Act o 1978 and FREEZE PRICES NOT PEOPLE.

STATEMENT OF CARL TYLER, OMAHA, NEBR.

Mr. TYLER. My name is Carl Tyler, and I am representing the several neighborhood and community groups.

People in our community are dying and hurting because of the high energy costs. Congress should be considering recontrol and not speeding up decontrol. Controls are necessary to maintain an industry which has proven time and time again that it cares nothing about the American people.

Controlling the fuel prices will allow people to pay their bills and put the oil industry on notice that Congress is serious about the energy issues.

Speed up decontrol, and Congress shows that it doesn't care until 1985.

STATEMENT OF CAROL GANOBCIK, PRESIDENT, SENIOR ACTION COALITION, LORAIN COUNTY, OHIO

Ms. GANOBCIK. I am Carol Ganobcik. I am the president of the Senior Action Coalition of Lorain County, Ohio.

Most of the seniors in our area live on fixed incomes. We represent 30,000 senior citizens in our area, but earlier this month the coalition undertook a survey of 300 of our seniors. We found that among other things in this survey, that their heating costs had been increased by 41 percent in 1 year.

They are having a terrible time meeting their bills now, and they urge, please, do stop decontrol. Freeze the prices, not the people.

[The prepared statement of Ms. Ganobcik follows:]

March 23, 1982

Senate Committee on Energy and Natural Resources
From: Senior Action Coalition, Lorain Co., Ohio

My name is Carol Ganobcik. I am the President of the Senior Action Coalition of Lorain County, Ohio. The Senior Action Coalition represents the more than 30,000 senior citizens living in Lorain County.

Most of the seniors in our area live on fixed incomes and nearly all of them are worried, frightened and angry about what is happening to their heating bills. None of us can even begin to imagine how we would cope with double or triple bills which could result from natural gas decontrol.

Earlier this month the coalition undertook a survey of Lorain County's seniors. The survey represented a random sampling of 225 seniors living in the communities of Lorain, Elyria, Avon, Avon Lake, Oberlin, Wellington North Ridgeville and Amherst.

The results show that:

95% think their gas bills are too high already
99% think that double bills would cause severe financial hardship
98% oppose the decontrol of natural gas

The SAC survey also discovered that the average winter heating bill came to $116.00 a month. A 1981 SAC survey found an average winter gas bill of $82.00. In one year, SAC found a 41% jump in average heating costs.

On March 13, 400 senior citizens attended a SAC sponsored public hearing with our Congressman, Don Pease. The message was clear- seniors can not pay their heating bills now. Seniors strongly oppose decontrol. But we were joined by other members of the community on March 13-churches, hospitals, unions, schools. There was no disagreement on two points-heating prices are too high now, and decontrol of natural gas must not be allowed to happen.

On behalf of Lorain County's seniors and with the concurrence of the rest of the community, I urge every member of this panel to do all in their power to stop decontrol of natural gas and freeze prices.

Ms. CINCOTTA. You might wonder why my statement is titled, "Btu's." Well, the industry, oil and gas, is arguing that there should be equal cost for Btu's, British thermal units, of energy. I would like to explain about Btu's in our way—the B is beans. The "u" is us. Saying that gas should be linked in price equally to oil is like saying beans should be the same price as T-bones because a given amount of beans and a given amount of T-bones provides the same protein energy. One pound of beans is 56 cents. Three pounds of T-bone amounts to $15. To us, that is exactly what the oil companies are selling to this Congress, and our feeling is that they have been lying to the Congress through the decontrol, when they capped the gas, when they hid the gas, when they came up with the scare stories, and what they are doing to the American public as far as heating right now and as far as the cost of gas right now.

I would like to have my testimony put into the record and leave you with recommendations—one, that you, the Senate Committee on Energy and Natural Resources, should not allow Charles Butler and FERC to decontrol gas in any way. The Congress said that there would not be any back-door decontrol, and indeed we would like you to make sure if he doesn't do it, that you ask him to resign.

Two, that you, the Senate Committee on Energy and Natural Resources, should kill any legislation for any speedup of decontrol of natural gas.

Three, that instead you should pass legislation right now rescinding the Natural Gas Policy Act of 1978 and freeze prices, not people, and the fourth recommendation, we hear a lot today about signals, signals coming from here to the world and to the country.

The best signal that this committee and this Congress could do for conservation is provide low interest money for people who weatherize and conserve on energy. The price is already too much for them.

Thank you.

Senator NICKLES. Thank you. We appreciate your input. I know that I am late for a meeting and I am sure the other Senators are. I might let the other Senators have some questions. I have possibly one but I am afraid to ask it. If I do we might be here all day.

Senator FORD. Go ahead. That's all right. We'll stay with you.

Senator NICKLES. I'll ask for a very short response because we are all overtime, but I might ask the last four panelists, not for each one of you to answer, but for a response. Would you all five of you favor, basically you said you wanted to hold down the price of energy because it costs too much to heat your home.

Thinking of that and trying to—I guess—would you also favor some price controls on food, on housing? You mentioned money—on health, on other major items of your budget; do you think the Government should come in and place some type of restrictions on those areas also?

Mr. CINCOTTA. I think the difference is you have a monopoly. I can grow beans in my back yard. I can't get gas in my back yard. You have a monopoly, and that is why the Congress of the United States did regulate fuel prices.

We can't get the energy. That is different than controlling beans or lettuce or something we can grow in our yard.

Senator NICKLES. What about housing?

Ms. CINCOTTA. Price control of housing?

Senator NICKLES. Should we have some type of limitations on rent and so on?

Ms. CINCOTTA. I came out in favor of rent control. I think you are dealing with something that—personally I really think that the Congress and our country is being held up by a monopoly that is really hurting our country. See, we can eat beans. We don't know what else to burn for fuel, and that is what people are—seniors are eating cereal when their check runs out. They can't get energy. They can't burn their furniture. They might burn their house down.

Senator NICKLES. Mr. Cooper and Dr. Cooper and Mr. Palmer and Mr. Buckley and Mr. Salvino also, I asked some additional questions but I will submit those to you in writing on behalf of myself and the other Senators.

Senator Johnston?

Senator JOHNSTON. Yes. To Dr. Cooper and Mr. Rothschild, as consumer advocates, how can you argue for maintenance of a law which subsidizes some consumers at the expense of other consumers?

Mr. ROTHSCHILD. In the first place, we never supported the Natural Gas Policy Act because we thought it was a decontrol bill in the first place. As you will remember, in 1979 the price of oil was about $15, and only because of the price of the world market led by OPEC, the price went up to $35 a barrel is there that difference between the price that was existing since 1978 and the price that is in existence today.

Of course, if the price of oil goes down to its marginal cost of $15 and the price under NGPA will be higher than the price of oil, so that first is the price area.

Next, there is no question that some consumers are going to be better off than other consumers, depending upon where they are in the country.

Senator JOHNSTON. Let me get this straight. You are not saying we should keep the NGPA? It should be changed?

Mr. ROTHSCHILD. I was never in support of NGPA to begin with.

Senator JOHNSTON. What is your position?

Mr. ROTHSCHILD. I would like to see the NGPA repealed and be back to the Natural Gas Act of 1934 under the regulation that existed then.

Senator JOHNSTON. What would the prices be on cost-based pricing?

Mr. ROTHSCHILD. It depends on what formula you use. If you use the ludicrous formula used under 770, it would be probably higher than the alternative price of oil. I don't think that was a cost-based formula. In any case, I agree that there is some discrimination. There is always going to be discrimination. Consumers in Rhode Island are going to be paying more than the consumers closer to the pipeline because of pipeline costs. Industry in the Northeast and Midwest is going to pay more than industry components in the Southwest because of the access and closeness of the pipeline, so yes, and there are other problems of the NGPA.

Senator JOHNSTON. I just asked how you could defend that, and you would not defend it. What you would do is go back to the Natural Gas Act, but not as interpreted by the courts. As interpreted by whom?

Mr. ROTHSCHILD. We would go back and different methodologies have been approved by the courts.

Senator NICKLES. Would you want to go to a marketplace?

Mr. ROTHSCHILD. If there were a competitive marketplace; unfortunately, the natural gas market isn't all that competitive and that is why I think we need regulation until we get some competitive pricing.

Senator JOHNSTON. What you would like is a rollback in gas prices?

Mr. ROTHSCHILD. It would be nice. I don't think it is very realistic.

Senator JOHNSTON. If we don't have a rollback, how do we deal with that problem of the so-called cushion where some pipelines have a lot of cheap gas, some have very expensive gas, and there is that differential?

Mr. ROTHSCHILD. That is the problem that existed before the Natural Gas Policy Act was passed. You had different kinds of access to different kinds of gas supplies. This is nothing new. I think that just is the fate of one pipeline's purchase of gas under a different kind of contracting arrangement and the area rate clauses that existed then.

It is not going to last for a long time under the NGPA. It is going to be changing eventually as old gas supplies disappear and new gas supplies come on at a higher price. I think that is something we will have to live with.

Senator JOHNSTON. I have a number of other questions, but I will simply say that, Mr. Chairman, this has been an excellent panel, as the two ones preceding that have been.

Let me just ask one question. Mr. Buckley, how did the Northeastern sectors feel about the conclusions you made? You stated that it is not in the interest of the Northeast as a region to have continued regulation.

Mr. BUCKLEY. It is not in the economic interests of the region. In fact, it is very strongly in the economic interests of the region to have gas deregulation. I couldn't give you a vote count for the Northeast. However, I am confident that should your bill S. 2074 which we strongly support move forward in this committee and from the committee to the floor, and we make the effort that we are planning to make, the studies we have done by Harvard University, by Charles Chikesky from Maryland and the Oak Ridge, Tenn., study, environmental studies, conservation studies, that when the Senators from our 9 States saw the result of those studies, I would be surprised if at least 12 to 14 were not supportive of your bill out of the 18 Senators of the Northeast.

It is just in their own strong economic interest, and their constituents' strong economic interest, to support natural gas deregulation. We have another study of the Pacific Northwest which shows Washington, Oregon, Idaho in exactly the same situation. They are at the world price of gas in Canada now, and their competitive position is going to be, to do nothing except improve with natural gas deregulation and you have all the producing States who are going to have shortages if this economy gets going again because of the intrastate lack of cushion.

Senator JOHNSTON. Is it in the national interest?

Mr. BUCKLEY. Absolutely in the national interest; for the first time in 30 years we will have a national energy policy with all energy forms competing with one another, with equity throughout the country, and every region can then do what it does best in the economic scheme of things without a distortion impact of enormously higher or lower prices caused by government interference.

I agree with Dr. Cooper on one statement. The great failure of the 1970's was an energy price failure, and that failure was right here in the United States because we controlled energy prices. Germany didn't. Japan didn't, and their countries are much stronger than we are today because we controlled oil. We controlled gas. We didn't do the things we needed to do, and we are paying for it now.

Fortunately, we have learned a lesson on oil, and boy, those benefits have been flowing in since we totally deregulated. We are down 25 cents in heating oil, down 25 cents in gasoline, and it is still going down because that decontrol worked, and so it would work with natural gas if we could just get on with it.

Senator NICKLES. Thank you, Senator Johnston. Senator Ford?

Senator FORD. Mr. Buckley, you talk a different language today than most of the people in the Northeast talked several years ago. You are smiling and you agree with me, I guess.

Mr. BUCKLEY. We get smarter as we get older.

Senator FORD. My father gets smarter, too, the older he gets. He was arriving at 60. He was about as smart as he is going to get!

You indicated that oil would be virtually even with natural gas in your area next year?

Mr. BUCKLEY. Next September, starting the heating season; oil is already cheaper than gas in the industrial residual area.

Senator FORD. Does that indicate to you that there would be no so-called fly-up at the end of the present expiration of NGPA?

Mr. BUCKLEY. I would think if gas were totally deregulated tomorrow, the fly-up in our region would be almost nil because they couldn't sell it in the marketplace.

Senator FORD. You couldn't sell gas in your marketplace?

Mr. BUCKLEY. That is correct.

Senator FORD. You wouldn't be able to sell gas in the marketplace?

Mr. BUCKLEY. If you have a big fly-up, you couldn't because the price would be too high.

Senator FORD. Under the bill that you vigorously support, you are going to go up about 400 percent in the next 3 years in natural gas, so you ought to be for that bill, you ought to hold on and let us reimpose the price schedule so that oil and you would have—you represent home heating oil, don't you? That's your business?

Mr. BUCKLEY. Yes.

Senator FORD. You should want natural gas to go as high as it can go so you will have more if you support this bill, because then you are going to have a 400-percent increase in natural gas to your customers in your area over the next 3 years.

Mr. BUCKLEY. I just don't believe it. You will have enough increase so that gas can be sold. When people stop buying it, people are not going to sit there with their gas wells shut in. They will say we will lower our price until we sell it. It is cheaper than oil—foreign, imported oil. That will be the energy source that we push out by natural gas deregulation.

Senator FORD. All right, sir. Let me ask you this. We are operating at 71 percent of our industrial capacity today, and the man from the chamber of commerce, I think, will substantiate that.

How much of a glut and how much of a reduction in price is the present situation helping you sell your home heating oil?

Mr. BUCKLEY. We certainly have welcomed the lower prices that have flowed from demand dropping faster than supply, and we expect to see that continue for the next couple of years.

Senator FORD. You mean the economy is not going to pick up then?

Mr. BUCKLEY. I mean the demand for energy is going to be considerably less around the world, barring major interruptions or wars, than the supply of energy.

Senator FORD. Let me ask you——

Mr. BUCKLEY. Oil energy.

Senator FORD. Well, they are getting ready to reduce the production in OPEC countries which will hold the price of oil up. At least that is their intention.

Mr. BUCKLEY. That is their hope.

Senator FORD. So we are not increasing our oil production here in this country since we deregulated, and so, really, the reason of any curtailment is conservation. It is the inability to buy because the price has been so high. Tell me why you are paying—you refer to Japan and Germany. Tell me why they are doing so much better than we are.

Mr. BUCKLEY. Basically they didn't try to cushion the shock of the higher energy cost. They accepted, absorbed them in their economy, started using energy far more efficiently, far faster than we did, and got it down as a proportion of the cost of operation, whether operating the home, the factory, the school, the hospital, or the plant, and by doing that, and aggressively seeking to utilize those industrial skills that they had, and once there were less energy-intensive technology automobiles and other things of that sort, they have been able to overcome those difficulties. We have never faced up to them.

Senator FORD. I think, if you will check, that gasoline was about the same price to manufacturers in those countries as it was here, but that dollar and a half tax that was put on per gallon by their governments caused the constituents to look for other sources.

Mr. BUCKLEY. Certainly. It caused them to buy more efficient cars.

Senator FORD. And that produced then the efficient car because government put the horrendous tax on it which we did not do.

Mr. BUCKLEY. We did not.

Senator FORD. So that indicates that it wasn't their ability to produce better or to have more. It was government's tax of that particular product that caused the direction in which other countries such as Germany and Japan travel, and now we are losing a

$35 billion balance of trade to Japan today because of their efficient automobiles, and Congress had to mandate the miles per gallon of the big automakers in order to get into competition. If we hadn't done that, we would have in all probability had yard after yard, train after train full of those monsters that nobody would buy.

Mr. BUCKLEY. It is certainly true that the taxing policies in Europe and Japan from World War II to today have stimulated and improved and given the technological ability of making fuel-efficient automobiles. Our unfortunate failure in the seventies was when the first price shock came, we shielded the American motorist from it. Detroit gave up the small cars, but because we shielded the consumer from the price of gasoline, they kept buying the larger cars so Detroit started making the big ones, and we get another price shock and Detroit has been getting mixed signals, the wrong signals, from subsidizing the consumer use of gasoline, keeping it cheap, not taxing it and not even letting it get to the world price, and those off and on again signals in the seventies put that automobile industry in a tailspin.

Senator FORD. There are some folks around who are a lot smarter than I am who think it might have been a management problem.

Mr. BUCKLEY. I'm sure, like most major problems in this country and in this economy, there is plenty of blame to share on all sides.

Senator FORD. Let me just say to you that we have been hearing for the last 15 years get Government off our backs, out of our pockets, that sort of thing. Then we see the signals change and the industry doesn't respond to those changes. Then we may have a gap that is going to be hard to close in the near future, a management gap with the people of this country, so I would be very hopeful that we could not let anything like that develop, the management gap, after 12 years of pounding the general public to believe that if we just deregulate, get the Government off our back and out of our pocket, and the first one we passed in August last year, we have been going all the way down. There hasn't been anything upturned about it since that time, so now that we have done it, you see what we have, and maybe as you say there is enough blame to go all the way around.

It is an American problem, but it is a shock, my friend, when you are asking for a 400-percent increase in the next 3 years to the distribution systems of natural gas in the area that you use, and you are not going to use it you say because the prices will be so high.

Mr. BUCKLEY. Where do you get 400 percent? It is about $2.5, and if you totally decontrol tomorrow, about a month from now the price might be $5 or $5.75. That is at the wellhead.

Senator FORD. Under NGPA it goes up to $20 a year, and this legislation lets it go up to $80 a year, and even down in Kentucky 4 times 2 is 8.

Mr. BUCKLEY. The legislation I have supported was Senator Johnston's.

Senator FORD. That is his bill.

Mr. BUCKLEY. Gradually phase out controls over a period.

Senator FORD. You increase the cost, and you increase the cost $20.

Mr. **Buckley**. Those costs are going up anyway. You are getting to market clearing. You know who is getting the money—the deep drillers. You are making many billionaires out there. I don't think that is the way to go as a Nation.

Senator **Ford**. I like you. You're a fighter. Shoot, you stick in there with us, and I like that very much, but let me just say this. It is going up under NGPA at the rate of $20, and under this bill you are going to accelerate that, and it is going up at about $80. No one has refuted that price, and on January 1, 1985, the lid is off of old gas. The lid is off of new gas or whatever, and that means that January 1, 1985, is whatever you get, and whenever you take old gas that is in that pipeline now, that is folded in for these people that can't hardly pay for it today, and you deregulate that, you really have got 30 percent of the marketplace that is really going to have some problems, and I wish you would look at the total, and what you are saying to me is there won't be any natural gas sold in the Northeast. You made that statement a minute ago because it is going to be higher than oil, and if it is going to be higher than oil, think of those people that don't use oil and use nothing but natural gas.

It is a country problem, not a regional problem.

Mr. **Buckley**. I understand that, Senator. I am sure that I can't make you feel totally comfortable, but the fact of the matter is natural gas prices will not rise above the equivalent price for oil because it is a domestic resource and if you are an oil company, and oil companies produce most of the natural gas you have today, you are buying a lot of foreign oil that someone else owns, you are not making a nickel of profit on it, you are selling your own natural gas, you will charge whatever price you have to, however low that goes, and even with the windfall profits tax on it, you will make that money here at home because it is money you are making and you will move that gas and you will back out that marginal oil you don't make money on, so what you look at when you try to figure out where gas prices are going to be is where are the oil prices?

Three-quarters of the gas competes with residual fuel in the industrial sector. One-quarter of the gas competes with heating oil for the residential sector. Three-quarters of that natural gas is going to be produced, and it is going to be held at however low a price it takes to undercut oil and move out foreign imports, and I am saying to you that the phase-in bill that Senator Johnston is talking about might result in a 15-percent increase a year at the burner tip in the user's office, in the user's home. Under NGPA today you are getting very modest rises in some areas but 40- and 50-percent increases in other areas because of the distortions and the cushion availability of natural gas. It is a terrible system, very inequitable. It gets us to a market clearing price for gas, but who benefits? Who benefits? The deep gas drillers who get the two and three times the market price? That is not a good national policy.

Let's let everybody operate in the marketplace. Don't be fearful of high prices. Gas has got to compete with oil, and it will, and it will be sold at whatever low price is necessary to sell it because it is going to be profitable to sell it compared to bringing in someone else's foreign oil.

Senator **Ford**. There are 50 million homes in this country, Mr. Buckley, as you probably know, that cannot use oil, who have to use natural gas, and the price for natural gas by your statement is going to be set by oil companies.

Now who sets our price of oil in this country?

Mr. **Buckley**. The marketplace.

Senator **Ford**. It does not. We are at 70 percent of the industrial production in this country. The economy is damn bad. It is almost in depression, and that is setting the price. It is not, and once we get back to 95 percent industrial production, then we are going to be importing oil in this country, and OPEC is going to be right back setting your home heating oil rates, sure as we are sitting here, and we are cutting out everything that we want to do, to make this country independent—energy independent—and we are still depending on things outside this shore.

The synthetic fuels program was not sent to this side of the Capitol Building as a synthetic fuels bill. It was sent over as the Defense Production Act for the defense of this country so we would have the energy, and now that we are in an economic slump, about 30 percent of the need is gone, and so, therefore, everybody is laying on that as decontrol is working.

Well, decontrol is not working. Decontrol is not working, because the economy is not working. If decontrol was working, the economy would be moving. The economy is not moving, and OPEC is setting our price.

Mr. Chairman, I hate to get so carried away at this, but you see I come from a coal producing State. My coal producing State wants to deregulate natural gas, and so I am really flying in the face of coal people in some respects because the higher the natural gas cost, the more coal we are going to sell because it is going to be the most efficient product at the price, and you are not going to burn much of it in the Northeast.

Mr. **Buckley**. We are converting to it every day up there.

Senator **Ford**. You just keep right on. You can thumb your nose at both of them. Burn some more wood. Now you are causing a pollution problem.

Mr. **Buckley**. A third of the oil dealers are selling coal as well.

Senator **Ford**. Good. I'll even put a little shellac on it and make it look pretty!

Senator **Nickles**. Senator, we thank you for your comments, and ladies and gentlemen, we appreciate your input. We do wish to notify everybody that we will be keeping the record open for 30 days, and also repeat our request for you to be responsive to our written questions.

The hearing will be adjourned.

[Whereupon, at 1:05 p.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Committee Questions

JAMES A. MC CLURE, IDAHO, CHAIRMAN

MARK O. HATFIELD, OREG.	HENRY M. JACKSON, WASH.
LOWELL P. WEICKER, JR., CONN.	J. BENNETT JOHNSTON, LA.
PETE V. DOMENICI, N. MEX.	DALE BUMPERS, ARK.
MALCOLM WALLOP, WYO.	WENDELL H. FORD, KY.
JOHN W. WARNER, VA.	HOWARD M. METZENBAUM, OHIO
GORDON J. HUMPHREY, N.H.	SPARK M. MATSUNAGA, HAWAII
FRANK H. MURKOWSKI, ALASKA	JOHN MELCHER, MONT.
DON NICKLES, OKLA.	PAUL E. TSONGAS, MASS.
JOHN P. EAST, N.C.	BILL BRADLEY, N.J.
JOHN HEINZ, PA.	

MICHAEL D. HATHAWAY, STAFF DIRECTOR
CHARLES A. TRABANDT, CHIEF COUNSEL
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

April 5, 1982

Honorable C. M. Butler
Chairman
Federal Energy Regulatory Commission
825 N. Capitol Street, N.E.
Room 9000
Washington, D.C. 20426

Dear Mr. Butler:

The attached questions from Members of the Committee are in follow-up to your appearance at the Committee's March 22 hearing on Natural Gas Policy and Regulatory Issues. Please provide your responses to these questions by May 1, 1982.

Sincerely,

James A. McClure

James A. McClure
Chairman

Attachment

JAM:HU:bn

1. Are you satisfied that well determinations are being accurately made? On what do you base your response? What efforts are being made by the FERC to assure that these determinations are accurate? Has the FERC requested more or less funding for this function?

2. Do intrastate pipelines have an actual advantage in competing with interstate pipelines to attach supplies?

3. Can you supply the Committee with figures indicating the frequency of curtailments by intrastate pipelines in each year from 1971-1981?

4. A major part of the problem you see coming in 1985 is due to contract provisions. Have you done a legal analysis of FERC's authority to limit the operation of indefinite price escalator and price redetermination clauses in existing contracts? If you have, would you please provide it for the record?

5. The Committee received testimony in our follow-up questions for last fall's hearings that FERC has authority to address the issue. You even have a petition before the Commission requesting you to act on the contract problem. When do you plan to act on that petition?

JAMES A. MC CLURE, IDAHO, CHAIRMAN

MARK O. HATFIELD, OREG.
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United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

April 5, 1982

Mr. J. Hunter Chiles
Director
Office of Policy, Planning and Analysis
Department of Energy
Room 7A-142 Forrestal
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Mr. Chiles:

The attached question is in follow-up to your appearance at the Committee's March 22 hearing on Natural Gas Policy and Regulatory Issues. Please provide your response to this question by May 1, 1982.

Sincerely,

James A. McClure

James A. McClure
Chairman

Attachment

JAM:HU:bn

1. Would you please provide the Committee with an estimate of the impact of accelerated natural gas decontrol on petroleum imports?

JAMES A. MC CLURE, IDAHO, CHAIRMAN

MARK O. HATFIELD, OREG.
LOWELL P. WEICKER, JR., CONN.
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D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, D.C. 20510

April 5, 1982

Honorable Erich Evered
Administrator
Energy Information Administration
Room 4302, Federal Building
12th and Pennsylvania Avenue, N.W.
Washington, D.C. 20585

Dear Mr. Evered:

The attached question is in follow-up to your appearance at the Committee's March 22 hearing on Natural Gas Policy and Regulatory Issues. Please provide your response to this question by May 1, 1982.

Sincerely,

James A. McClure

James A. McClure
Chairman

Attachment

JAM:HU:bn

1. Would you please provide the Committee with an estimate of the impact of accelerated natural gas decontrol on petroleum imports?

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON 20426

IN REPLY REFER TO:

MAY 3 1982

Honorable James A. McClure
Chairman
Committee on Energy and
Natural Resources
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

In response to your letter of April 5, 1982, enclosed are responses to questions raised by the Committee at the March 22 hearing on natural gas policy and regulatory issues.

Sincerely,

C. M. Butler III
Chairman

Enclosures

Question:

1. Are you satisfied that well determinations are being accurately made? On what do you base your response? What efforts are being made by the FERC to assure that these determinations are accurate? Has the FERC requested more or less funding for this function?

Answer:

Our experience to date indicates that the vast majority of well category determinations are being accurately made. Of over 150,000 determinations received by the Commission since implementation of the NGPA, only some 3,000 or approximately 2 percent of the number received have been questioned. Of these, over 1,000 were ultimately supported and qualified. A detailed narrative and statistical analysis of the determination process is contained in my November 5, 1981, statement before the Committee concerning Title I implementation. As indicated in that statement I believe the figures reflect the care with which the jurisdictional agencies have approached their responsibilities under the statute.

The FERC has the responsibility to assure that natural gas producers are adhering to the pricing and determination procedures and that the consumers are protected from overcharges. This responsibility is implemented by the Commission's Division of NGPA Compliance which coordinates the well category determination process with the 33 jurisdictional agencies and is responsible for the noticing and review of the well category determinations. The review process consists of desk and field audits.

During the initial stages of the NGPA compliance effort all determinations were desk audited to insure that the jurisdictional agencies were properly interpreting and applying the statute and Commission regulations in making their well category determinations and also to encourage the filing of proper applications by the producers. Three years have passed since implementation of the NGPA and the jurisdictional agencies and the producers now have a better understanding of the statute and regulations. It is apparent that the determination process is now working well. Therefore, given the large number of filings and the reduction in staff, the Commission began a selective review procedure in Fiscal Year 1982. Our selective review procedure concentrates on the newer incentive price programs involving tight formations, Devonian shale, and production enhancement gas since these categories are eligible for the highest prices under the NGPA. Since prices received by producers for certain deregulated categories now exceed $10/MMBtu, assurance is required that wells are properly categorized. The importance of the review function can be demonstrated by the fact that although only 1 to 2 percent of all determinations are questioned during the review period the potential overcharges prevented are in excess of $20 million annually.

The Commission desk audits are complemented by a field audit program. Here also, due to the large number of determinations received, it is not possible to perform a field audit of each determination. A sample of the determinations to be audited is selected by statistical methods and includes determinations from each of the 33 jurisdictional agencies. An awareness of the audit program by the producers encourages voluntary compliance with the NGPA as evidenced by the fact that over 900 stripper well applications were withdrawn by a number of companies as possibly not qualifying under the statute. One major producer has been fined $10,000 as a result of inaccurate applications discovered by staff.

As of April 1, 1982, refunds of over $28 million have been accounted for by the Division of NGPA Compliance indicating, in part, the integrity of the determination process and staff audit procedures. The Commission's capabilities in the area of NGPA Compliance have also been facilitated by the merger of the Office of Enforcement with the Office of the General Counsel which will facilitate coordination among the various areas of expertise within the General Counsel's office.

Discounting inflation, funding for the wellhead pricing decision unit has been reduced. Positions in the Division of NGPA Compliance have decreased from 159 positions in 1979 to 104 as of April 1, 1982 in recognition of the fact that the workload of the Division would peak during the first two years after passage of the NGPA. Travel funds have also been reduced accordingly. The current level of staffing, and funding is now considered adequate to insure that the wellhead pricing provisions of Title I are properly administered. The reduced staffing has been accompanied by more efficient determination procedures and increased efficiency with no loss in assurance that consumers are paying proper rates.

Question:

2. Do intrastate pipelines have an actual advantage in competing with interstate pipelines to attach supplies?

Answer:

The FERC and other governmental agencies and nongovernmental bodies are currently seeking to obtain additional information relating to natural gas price and supply for particular regions and pipelines. The data now available suggest the following tentative conclusions:

(1) Intrastate pipelines in Louisiana and Texas in general have average purchased gas costs that are significantly higher than those of the interstate pipelines with which they compete for new supplies. We do not have comparable information for intrastate pipelines in other producing states.

(2) The reserve-to-production ratios of intrastate pipelines in Louisiana and Texas appear to be declining more rapidly than the corresponding ratios for interstate pipelines in those states, tending to indicate that these intrastate pipelines are at a competitive disadvantage.

(3) The Louisiana and Texas intrastate pipelines' price disadvantage may be causally related to their declining reserve-to-production ratios. We do not yet know enough about the operation of the natural gas field market to be certain of this relationship. On the other hand, we do not have any information to suggest that intrastate pipelines in those states or elsewhere are currently at an advantage in this respect.

Question:

3. Can you supply the Committee with figures indicating the frequency of curtailments by intrastate pipelines in each year from 1971 to 1981?

Answer:

As intrastate pipelines are beyond the regulatory jurisdiction of the Commission under the Natural Gas Act, the Commission has had no occasion to compile specific information on the frequency of curtailments by these pipelines. These pipelines are, however, generally regulated by State agencies, such as the Texas Railroad Commission, and the Louisiana Conservation Commission (Pipeline Division). Accordingly, I believe you may obtain the requested information directly from these responsible state agencies.

Question:

4. A major part of the problem you see coming in 1985 is due to contract provisions. Have you done a legal analysis of FERC's authority to limit the operation of indefinite price escalator and price redetermination clauses in existing contracts? If you have, would you please provide it for the record?

Answer:

No legal analysis of the Commission's authority to deal with these pricing clauses in existing contracts has presently been performed. As you may be aware, however, discussion of the Commission's legal authority to do so is contained in several petitions for rulemaking which have been filed with the Commission by various private parties.

Question:

5. The Committee received testimony in our follow-up questions for last Fall's hearings that FERC has authority to address the issue. You even have a petition before the Commission requesting you to act on the contract problem. When do you plan to act on that petition?

Answer:

The Commission has received a number of petitions calling attention to the "contract problem" and discussing the Commission's authority to address that problem. For example, petitions have been received from Laclede Gas Company, Docket No. RM82-1 (filed October 2, 1981), the People of the State of California, Docket No. RM81-30 (filed April 29, 1981), the National Association of Regulatory Utility Commissioners, Docket Nos. RM82-20 (filed March 9, 1982) and RM82-21 (filed March 12, 1982), and the Process Gas Consumers Group, et al., Docket No. RM82-17 (filed March 1, 1982).

The issues raised in these petitions are discussed in the Notice of Inquiry issued by the Commission on April 28, 1982. That Notice of Inquiry specifically calls for further comment on the scope of the Commission's authority to adopt rules mitigating the apparent adverse effects of indefinite price escalator clauses, oil-tied pricing provisions, and stringent take-or-pay requirements in gas sales contracts. On the basis of the comments and other information received in response to the Notice of Inquiry, the Commission will make a determination of whether or not further administrative action is appropriate.

Department of Energy
Washington, D.C. 20585

May 3, 1982

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
MAY 4 1982
WASHINGTON, D.C. 20510

Honorable James A. McClure
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

As requested in your April 5 letter, I submit the following answer to your question on the impact of accelerated natural gas decontrol on petroleum prices.

Sincerely,

J. Hunter Chiles, III
Director
Policy, Planning, and Analysis

Attachment

Q. Would you please provide the Committee with an estimate of the impact of accelerated natural gas decontrol on petroleum imports?

A. The Office of Policy, Planning, and Analysis estimated in their November 1981 publication A Study of Alternatives to the Natural Gas Policy Act of 1978 that accelerated natural gas decontrol might reduce oil imports by 260 thousand barrels per day from now until 1985 relative to current policy. This reduction in oil imports could be achieved by allowing the target price for gas from wells drilled after 1/1/82 to be tied to oil, and by gradually allowing the price for all other NGPA categories to reach this target price by 1985. The resulting increase in gas supplies prior to 1985, relative to what is anticipated to occur under current policy, would create less demand for oil, and would back out oil imports. The cumulative impact on oil import levels from 1982 through 1995, however, is expected to be negligible. This result occurs because the cumulative amount of gas supplies from 1982-1995, with either the NGPA or accelerated gas decontrol, is expected to be roughly similar.

Department of Energy
Washington, D.C. 20585

May 3, 1982

Honorable James A. McClure
Chairman
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

This letter is in response to your question of April 5, 1982, concerning the impact of accelerated natural gas decontrol on petroleum imports.

This issue was addressed in the August 1981 Energy Information Administration report Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices. In the report, decreases in oil and gas imports were projected for two cases: 1) deregulation of new gas prices in 1982 (partial deregulation) and revocation of the gas use restrictions of the Powerplant and Industrial Fuel Use Act of 1978 (FUA); and 2) deregulation of old and new gas prices in 1982 (total deregulation) and revocation of FUA gas use restrictions. These cases were compared against a reference case assuming no modification of the Natural Gas Policy Act (NGPA) and enforcement of the FUA restrictions. The estimates of import reductions are for oil and gas combined on a Btu-equivalent basis. There was no attempt to distinguish between oil and gas savings.

The following excerpt from the report [p. 65] summarizes the results:

> "For both the partial and total deregulation scenarios, the projected reductions in oil and gas imports are substantial. Averaged over the period 1982-1985, partial deregulation is projected to result in a reduction of oil and gas imports by 540,000 barrels per day which (at the oil price projection used) amounts to a saving of $27.2 billion over the 4 years, in 1979 dollars. The corresponding figures for total deregulation cases are 670,000 barrels per day and $33.4 billion."

Under the NGPA imports of gas or oil, which are needed to meet shortfalls in domestic gas supply, are expected to be greater than with the decontrol alternatives considered. Higher prices due to decontrol stimulate domestic gas production and reduce natural gas demand, lessening the gap that imports need to fill.

Lifting the gas restrictions of FUA on electric utilities is regarded as having only a small effect on imports over the forecast period, in part because of the large number of exemptions that have been granted. Increased gas use in powerplants tends to displace oil imports on nearly a Btu-equivalent basis. However, during the forecast period, further increases in gas use by electric utilities would mostly be supplied by increased imports. The only significant effect that is likely to occur with the revocation of FUA gas use restrictions is a small increase in domestic production in response to increased prices.

A copy of the report is enclosed for your information.

Please contact me at 252-6411 if there are any futher questions.

Sincerely,

J Erich Evered

J. Erich Evered
Administrator
Energy Information Administration

Enclosure

(Committee Note.--Only the Executive Summary is reprint here; the balance of the report has been retained in committee files.)

DOE/EIA-0303

Analysis of Economic Effects of Accelerated Deregulation of Natural Gas Prices

August 1981

U.S. Department of Energy
Energy Information Administration
Office of Energy Markets and End Use
Longer-Term Information Division

PREFACE

This study was undertaken by the Energy Information Administration at the request of Senator Howard M. Metzenbaum, former Chairman of the Subcommittee on Antitrust, Monopoly and Business Rights of the Senate Judiciary Committee. The cases considered in the analysis were outlined and clarified through discussion with Congressional staff.

The authors of the working papers listed in Appendix A, as well as many other individuals in the Energy Information Administration, contributed to this report. The natural gas model used was developed under the overall direction of Frederic Murphy and Susan Shaw. Richard Thrasher provided the supply equations of the model. Thomas Mooney, Terry Morlan and Mark Rodekohr developed the representation of gas demand used. The projections of macroeconomic results and of impacts on household expenditures were prepared, respectively, by William Curtis and Gerald Peabody. Harvey Greenberg made substantial contributions to the design and presentation of the analysis. David McNicol supervised preparation of this report. Lillian Regelson exercised overall direction of the project.

EXECUTIVE SUMMARY

This report presents an analysis of some of the economic effects that might result from deregulation of the wellhead prices of natural gas in 1982 rather than according to the schedule provided for by the Natural Gas Policy Act of 1978 (NGPA). The study does not attempt a complete analysis of the costs and benefits of accelerated deregulation of natural gas prices. It is limited to two topics:

- o the impact that accelerated deregulation can be expected to have on natural gas prices, consumption, and supply; and
- o the implications of these effects on oil and gas imports, consumer expenditures, the inflation rate, and real Gross National Product (GNP).

Projections of these impacts would be major parts, but not the whole, of a complete economic analysis of accelerated deregulation of natural gas prices.

Design of the Study

The NGPA provides for controls on the wellhead prices of almost all of the natural gas produced in the United States through the end of 1984. The ceiling prices of some categories of natural gas defined in the NGPA--referred to as "new gas"--increase year-by-year through 1984. These increases were apparently designed to yield natural gas prices at the end of 1984 equivalent (on a Btu basis) to an oil price of $15 per barrel. On January 1, 1985, the price of new gas is to be deregulated. Controls would be retained on other categories of gas, which are often referred to collectively as "old gas."

This study is designed to examine some broad questions about the effects of the NGPA and what might result from more rapid and/or more extensive deregulation of natural gas markets. The attention paid to the possibility of accelerated deregulation in part reflects the currently widespread impression that the ceiling on new gas prices in the NGPA was geared to a projection of the world oil price in 1985 that now seems far too low. Consequently, there is a question of whether natural gas prices will increase sharply in 1985 when (under the NGPA) new gas will be deregulated. There is a corresponding question for any accelerated deregulation option: Will gas prices increase sharply at the time that deregulation occurs? More generally, there are questions about how the implications of various accelerated deregulation options compare to those of the NGPA in terms of natural gas prices, consumption, domestic production, the risk of gas shortages, effects on oil and gas imports, consumers' energy expenditures, inflation, and real Gross National Product.

One set of cases considered in this study assumes that deregulation would occur on January 1, 1982. Another set assumes deregulation on January 1, 1983. Within each of these sets of cases, two alternatives on the scope of deregulation were considered:

- o deregulation of new gas only; i.e., of those categories that would be deregulated by the NGPA in 1985; and
- o deregulation of old and new gas.

For all of these cases, results were computed assuming that natural gas use restrictions of the Powerplant and Industrial Fuel Use Act of 1978 (FUA) are not enforced. In selected cases, projections were also made on the assumption that the FUA natural gas use restrictions are enforced while deregulation of gas prices is accelerated and/or broadened in scope. (Among other things, FUA restricts gas use by electric utilities and large industrial boilers.) Finally, projections were made with and without the FUA gas use restrictions assuming no modification of the NGPA. The study spans the period 1982 through 1985.

The text of the study focuses on three cases:

- o a reference option that assumes no modification of the NGPA and strict enforcement of the FUA natural gas use restrictions;
- o deregulation of new gas prices in 1982 and revocation of the FUA restrictions on gas use;
- o deregulation of old and new gas prices in 1982 and revocation of the FUA gas use restrictions.

These options were singled out for discussion because they clearly exhibit the key types of results found in the various cases. This study does not attempt to provide definitive projections of the economic effects of any of the cases considered. Rather, it seeks to identify key uncertainties in the analysis of accelerated deregulation of the natural gas markets.

Assumptions and Limitations

Projections were made for each of the policy options sketched above for a range of assumptions on the levels of natural gas supply and demand. The qualitative character of the results proved to be very sensitive to assumed levels of supply and demand. For example, the NGPA was found to provide a smooth transition to deregulation of new gas prices in 1985 if demand is relatively low and supply relatively high. Higher levels of demand and lower levels of supply result in a large increase in projected natural gas prices in 1985. Consequently, discussion of assumptions plays a major role in the study.

One of the cases considered was based on the projections of United States natural gas production and consumption published in Volume 3 of the Energy Information Administration's (EIA) Annual Report to Congress for 1980 (ARC'80). Analysis done in the EIA since those projections were completed suggests that the level of natural gas supply and demand used were both probably somewhat low. For that reason, this study considered three alternative cases: (i) a higher level of natural gas demand (and gas supply based on ARC'80); (ii) a higher level of natural gas supply (and gas demand based on ARC'80); and (iii) higher levels of gas supply and demand. A fifth set of assumptions on gas supply and demand--called the central case--was constructed to yield projected natural gas prices that fall roughly in the middle of the range of projected prices that result from the other cases. (See chapter 2, pages 9-12 for a more complete description of how the cases are defined.)

Table E-1 shows the assumptions made on two of the most important determinants of the model's representation of gas supply--average finding rate and the Price Index for Oil and Gas Field Machinery. Also shown are projections of domestic production for the reference case (which assumes no modification of the NGPA and enforcement of the FUA restrictions on gas use). The "finding rate" is a measure of the amount of gas discovered per foot of exploratory drilling. The ARC'80-based supply projections assume a finding rate about 12 percent below the average finding rate for 1977-1979 reported by the American Gas Association. In the "higher" supply cases the finding rate is assumed to be about 8 percent above this average. The higher supply cases also assume a slower rate of increase in the Price Index for Oil and Gas Field Machinery.

Similar information on the demand assumptions and projections is presented in Table E-2. The higher demand case assumes that gas, by 1985, takes a dramatically larger share of the market for space heating in new single family houses. Of much greater importance to the

Table E-1. Key Gas Supply Assumptions and 1985 Projections of U.S. Gas Production for the Reference Case

		1985[f]	
	History	ARC 80 Based Cases	Higher Supply Cases
Average Finding Rate[a] (Thousand cubic feet per foot)	300[b]	265	325
Real Price Index[c] for Oil and Gas Field Machinery	1.00[d]	1.31	1.20
Domestic Gas Production (Trillion cubic feet annually)	20.2[e]	16.5	18.2

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[a] Annual reserve additions (except revisions) of non-associated gas in the lower-48 states divided by annual drilling footage expended on gas exploratory wells.

[b] Average, 1977-1979.

[c] See pp. 41-43 for a discussion of this index.

[d] Level of the index for 1980.

[e] Average 1979-1980.

[f] The figures for average finding rate and the real price index are projections of the average level of these variables in 1985. The figure for domestic gas production is the projected total for 1985.

Table E-2. Key Gas Demand Assumptions and 1985 Projections of U.S. Gas Consumption for the Reference Case

		1985	
	History	ARC 80 Based Cases	Higher Demand Cases
Gas share of industrial boiler fuel market (percent)	49[a]	38	70
Gas share of market for space heating in new single family houses (percent)	39[b]	30	60
U.S. natural gas[c] consumption (trillion cubic feet annually)	20.0[d]	17.5	20.0

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[a] 1975

[b] 1979

[c] Includes consumption by natural gas pipelines in transportation of natural gas.

[d] 1980 consumption from Energy Information Administration, 1980 Annual Report to Congress Vol. 2. p. 107.

projected levels of natural gas consumption is the assumption, in the "higher" demand cases, that the gas share of the industrial boiler fuel market increases to 70 percent by 1985. This assumption involves the rate of substitution of coal for gas. The ARC'80-based demand cases imply a rapid substitution of coal for gas and oil in industrial markets, driven by lower total costs of using coal. The higher demand cases assume that this displacement will proceed much less rapidly, implying greater gas consumption over the next several years. In addition to this consideration, it is possible that (because of past shortages) a significant latent industrial demand for gas exists, which will become manifest when reliable supplies are available.

Two other major qualifications must be noted. First, some of the results reflect the structure of the Data Resources, Inc. (DRI) model of the U.S. economy, used in this study to analyze the implications of accelerated deregulation for the inflation rate and real GNP. Other models of the economy which represent various aspects of the U.S. economy in different ways or place more stress on, for example, exchange rate adjustments, might yield substantially different results. The DRI forecasts also depend on specific Government monetary and fiscal policies, and the June forecast used does not incorporate recent changes in Federal taxes, spending and some other aspects of Administration economic policies. Moreover, the DRI model portrays to only a limited extent the substitution decisions made in response to shifts in relative prices.

Second, the results obtained are sensitive to the amounts of old gas that are currently supplied and likely to be produced over the next four years. EIA is continuing its effort to refine its estimates of these quantities.

Effects on the Natural Gas Markets

One of the goals of the NGPA was to provide a smooth transition to deregulation of new natural gas prices in 1985. This was to be accomplished through automatic increases in ceiling prices that were apparently intended to yield parity (on a Btu basis) between the price of new gas and the price of oil by 1985. The NGPA does not, however, contain any mechanism to adjust natural gas price ceilings at the wellhead in response to the doubling of world oil prices that occurred from 1979 to 1980.

Consequently, there is a question as to whether there is likely to be a sudden increase in average gas prices in 1985 when new gas prices are deregulated under the NGPA. There is also a question as to whether the NGPA will lead to natural gas shortages and increased imports during the next three years by holding prices too low for the market to clear.

No Modification of the NGPA and Enforcement of FUA (Reference Case)

The answers to these questions prove to turn on what is assumed about the levels of gas supply and demand:

- In the cases that assumed the ARC'80-based level of demand there is only a small increase in average residential natural gas prices with deregulation in 1985. There is also in these cases no indication that shortages would occur over the period 1982-1985.

- The higher demand cases and the central case produce sharp increases in projected average natural gas prices upon deregulation in 1985. Furthermore, in these cases it appears that either gas imports would have to be considerably higher than historical trends, or there would be gas shortages in 1983-84.

Deregulation of New Gas Prices in 1982 and Revocation of FUA Gas Use Restrictions

The questions presented by the accelerated deregulation options are a reflection of those for the NGPA. Would accelerated deregulation lead to large increases in prices when it occurred? Would natural gas prices be uniformly above those that would prevail under the NGPA?

Again, answers to these questions differ for the various cases examined:

- In the ARC'80-based demand cases, deregulation of new gas prices in 1982 and revocation of FUA gas use provisions do not lead to a sharp increase in projected average gas prices.

Although projected prices for this option are higher than prices in cases assuming no modification of the NGPA and enforcement of FUA, the differences are not large and the pattern of prices over time is the same for both options.

- For the higher demand and central cases, there are differences between the two options. Deregulation of new gas prices in 1982 leads to a sharp increase in projected average gas prices in 1982. However, it avoids the sharp increase in 1985 projected assuming no modification of the NGPA and strict enforcement of FUA gas use restrictions. Furthermore, the deregulation option leads to a lower projected price for 1985 and about the same projected price for 1984. Finally, there is no prospect of systematic shortages during the period 1982-1985 if new gas prices are deregulated in 1982.

Deregulation of Old and New Gas and Revocation of FUA

The pattern of changes in projected prices, assuming deregulation of old and new gas prices, is similar to that found for deregulation of only new gas prices (assuming revocation of FUA gas use restrictions):

- In the ARC'80-based demand cases, projected average natural gas prices in 1982 are above those which assume no modification of the NGPA and increase at about the same rate after 1982.

- In the higher demand cases, projected average natural gas prices increase very sharply in 1982 but for 1985 are slightly below those for the reference case.

Deregulation of old and new gas in 1982, however, leads to projected average prices that are uniformly and substantially higher than those that result assuming deregulation of new gas only.

Impacts on Oil and Natural Gas Imports, Consumer Expenditures, Inflation and Real Gross National Product

The projections obtained for the central case assumptions were used as input to other models to obtain estimates of the implications of accelerated deregulation for oil and gas imports, consumer expenditures on natural gas, the inflation rate and real GNP. The results of this part of the study suggest the following:

- Accelerated deregulation of natural gas prices and revocation of the gas use restrictions imposed by FUA would reduce oil and gas imports. Deregulation of old and new gas prices would reduce imports of oil and natural gas by an estimated average of 670,000 barrels (oil equivalent) per day over the period 1982-1985. The corresponding estimate for deregulation of only new gas prices in 1982 is 540,000 barrels per day.

- Deregulation of new gas in 1982, instead of retaining the NGPA, is projected to increase 1982 median expenditures on gas for households using natural gas by 10 percent. For 1985, however, projected median expenditures are 20 percent less when compared with assuming no modification of the NGPA. The corresponding figures assuming deregulation of old and new gas are 29 percent more in 1982 and 11 percent less in 1985.

- For the period 1982-1985 as a whole, the cumulative effect of deregulation of new gas prices and revocation of the FUA gas use restrictions on projected real GNP is positive. Compared to the reference case (no modification of the NGPA and enforcement of the FUA gas use restrictions), projected real GNP under this option is lower in 1982 and 1983 but higher in 1984 and 1985. Summed over the period, deregulation of new gas prices in 1982 results in an increase of $21.5 billion in projected real GNP. Projected real GNP for 1984 and 1985 is also higher (as compared to the reference case) if both old and new gas prices are deregulated. However, for the period 1982-1985 as a whole, this option results in a cumulative reduction of $5.5 billion in projected real GNP.

- Deregulation of natural gas prices in 1982 (particularly deregulation of old and new gas prices) would increase inflationary pressures somewhat in 1982 but improve matters thereafter, with the improvement becoming significant in the 1985 projection.

These results should not be regarded as a complete analysis of the effects of accelerated deregulation of natural gas prices and revocation of FUA gas use restrictions on the economy. A more thorough analysis could lead to a large number of individually small but cumulatively important adjustments in resource use that are captured to only a very limited extent in the sort of aggregate model used in this study.

APPENDIX II

Additional Material Submitted for the Record

AMERICAN HOSPITAL ASSOCIATION
444 NORTH CAPITOL STREET, N.W., SUITE 500, WASHINGTON, D.C. 20001 TELEPHONE 202-638-1100
WASHINGTON OFFICE

April 29, 1982

Honorable James McClure
Chairman
Committee on Energy and Natural Resources
U.S. Senate
Washington, D.C. 20510

Dear Mr. Chairman

On March 22-23, the Committee on Energy and Natural Resources held hearings on the issue of decontrol of natural gas prices by 1985 and acceleration of the decontrol schedule contained in the Natural Gas Policy Act of 1978 (Public Law 95-621). The American Hospital Association, representing over 6,300 hospitals and health care institutions, welcomes this opportunity to address this issue and respectfully requests that our views be included in the Committee's hearing record.

Currently, over two-thirds of the nation's hospitals depend on natural gas as their primary fuel. AHA is concerned that accelerated decontrol of natural gas prices--as proposed by the Reagan Administration earlier this year, and as contained in several legislative proposals (S.2074, H.R.5866) now before Congress--could lead to a dramatic increase in hospitals' operating expenses at a time when these institutions are already under severe financial constraints because of recent reductions in federal health expenditures.

Several important questions exist regarding the need for or impact of accelerated decontrol of natural gas prices. However, one outcome is clear--costs to users will rise significantly as current controls are lifted. In considering the legislative proposals now pending, AHA believes the Committee should be aware of the potential cost impact of decontrol on hospitals. In addition, we would like to recommend a change to the Natural Gas Policy Act which, we feel, would assure hospitals of access to adequate supplies of natural gas during a national shortage.

Cost Impact to Hospitals of Natural Gas Price Decontrol

Hospitals, which must operate 24 hours a day, 365 days a year, are large consumers of natural gas. According to usage data obtained in the 1980 AHA Hospital Energy Survey, hospitals currently spend approximately $873.7 million per year for natural gas, based on a price of $4 per 1000 cubic feet (Mcf). Although estimates of the cost impact of decontrolling natural gas prices vary widely, recent studies by the Department of Energy (DOE) and the American Gas Association (AGA) suggest that prices would increase significantly for hospitals.*

Based upon DOE's projection of price increases for the industrial and residential sectors under complete decontrol in 1985, the AHA estimates that natural gas prices for hospitals could increase 60 percent over 1982 costs (based on 1981 dollars per MMBTUs). This projection would mean an increase of $524 million in natural gas costs to hospitals in 1985. According to a projection by the American Gas Association the outlook is even worse. AGA estimated that complete decontrol by 1985 could lead to natural gas price increases of 95 percent for commercial users, a price category that includes most hospitals. Under AGA's projection, we estimate that hospitals would be spending $830 million more for natural gas in 1985 than now (at $4/Mcf and zero inflation).

Priority Status for Hospitals During a Natural Gas Shortage

AHA is very concerned about the potential effect of a natural gas shortage on hospitals' ability to deliver essential health services. Accordingly, we recommend that, as Congress begins to examine specific decontrol measures, consideration be given to broadening Section 303(k) of the Natural Gas Policy Act specifically to identify hospitals as high priority users during a natural gas supply emergency declared under Section 301 of that act. We believe this priority designation would be necessary to ensure the uninterrupted delivery of essential health services during a natural gas supply crisis.

Conclusion

AHA appreciates this opportunity to discuss the potential effect on hospitals of decontrolling natural gas prices. We look forward to working with the Committee as it begins to consider particular decontrol legislation, and we will be pleased to provide further information on any issue addressed in this statement or on other questions relating to hospitals' experience with current natural gas policy.

Sincerely

Dwight M. Geduldig

Dwight M. Geduldig
Acting Director

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*1. A Study of Alternatives to the Natural Gas Policy Act of 1978, November 1981, DOE, Office of Policy, Planning, and Analysis.

2. Consumer Impact of Indefinite Gas Price Escalator Clauses Under Alternative Decontrol Plans, American Gas Association, November 6, 1981.

PREPARED STATEMENT
OF THE
ASSOCIATION FOR EQUAL ACCESS TO NATURAL GAS MARKETS AND SUPPLIES

Written Statement by

David W. Wilson

President, Association for Equal Access
to Natural Gas Markets and Supplies

submitted to the

Senate Committee on
Energy and Natural Resources

I. INTRODUCTION

Mr. Chairman, my name is David W. Wilson and I am Vice President of Corporate Development and Compliance for Consolidated Oil and Gas Company, an independent oil and gas producing company headquartered in Denver, Colorado. I am submitting this statement today in my capacity as President of the Association for Equal Access to Natural Gas Markets and Supplies for the consideration of the Committee, even though an oral presentation during this initial set of hearings was not possible. Since that is such a long title, not subject to being easily shortened, we refer to this organization as "NGEA", standing for "Natural Gas Equal Access", so that is the way I will refer to it during the remainder of this presentation.

NGEA is a recently formed nonprofit association for independent producers and users of natural gas, established to promote greater access to natural gas markets for producers and to natural gas supplies for users. At the present time, access to natural gas markets is effectively limited by existing laws and regulations so that producers can sell their gas only to one kind of purchaser, a natural gas pipeline. Access to natural gas supplies is also limited by existing laws and regulations so that anyone wanting to buy gas must buy it from only one kind of seller, again, a natural gas pipeline. The result is that natural gas is the only commodity in our economy that must be sold to the shipper at the place of production and then bought from the shipper at the point of distribution or consumption. This works to the detriment of both consumers and producers as I shall describe in some detail.

NGEA greatly appreciates this opportunity to present its views on natural gas policy and regulatory matters from the perspective of an organization whose main objective is to provide all producers, purchasers and consumers of natural gas with access to gas markets and supplies equal to the access now enjoyed only by natural gas pipelines. It is our contention that only with a truly natural market for natural gas can the benefits of natural gas production be fairly distributed among the various components of the natural gas industry rather than being concentrated in the transmission sector of the industry. We feel that this will become even more critical as a higher percentage of natural gas becomes deregulated, whether by the timetable established by the Natural Gas Policy Act of 1978 (NGPA) or by intervening legislation accelerating decontrol. NGEA has presented a similar statement to the Joint Economic Committee's Subcommittee on International Trade, Finance and Security Economics.

Before discussing the lack of access for natural gas markets and supplies and the problems created for consumers and producers, it would be instructive to review briefly the history of gas transmission regulation.

II. HISTORY OF INTERSTATE PIPELINE REGULATION

A. Pipeline Regulation Before The Natural Gas Act

There was no regulation of interstate pipelines prior to 1938 when the Natural Gas Act was passed. Attempts by State and local governing bodies to impose controls on interstate pipelines were unsuccessful because of their interstate character and the Interstate Commerce Act of 1906 specifically excluded interstate pipelines from regulation by the Interstate Commerce Commission. This absence of regulation lead to a tremendous growth in pipelines so that by 1934, approximately 150,000 miles of high pressure transmission lines were in use.

Several attempts to impose effective regulations on pipelines failed to restrain the use of monopoly power they had attained. In 1933, for example, a common carrier provision was dropped from the Wheeler-Rayburn Act and when that bill was finally passed as the Public Utility Holding Company Act of 1935, holding companies that controlled interstate pipelines were exempt.

Regulation of pipelines had become very critical because pipelines themselves have the characteristics of a natural monopoly. A pipeline which serves a producing area could control the price of the gas it purchased from a producer and the price it charged distributors by virtue of its ability to exert a disproportionate influence on the market. An established pipeline could control the market because it could expand its capacity and reduce its purchase price until it eliminated any potential competition. This natural monopoly power of a pipeline in the field is more accurately described as a monopsony. A monopsony occurs when the buyer, rather than the seller, exerts a disproportionate influence on the market and on pricing of gas. It was against this background of extraordinary growth in the interstate pipeline industry without any regulation whatsoever that in 1938 the Natural Gas Act was passed.

B. The Natural Gas Act

In passing the Natural Gas Act (NGA), Congress acknowledged for the first time that pipelines provide a service which is affected by a public interest. The NGA stated as follows:

> It is declared that the business of transporting and selling natural gas for ultimate distribution to the public is affected with a public interest, and that federal regulation in matters relating to transportation of natural gas and the sale thereof in interstate and foreign commerce is necessary in the public interest.

There were at least two elements of the public interest that were intended to be addressed and improved by the NGA. First, that legislation, despite the absence of a common carrier provision, was intended to reduce the monopoly power of interstate natural gas pipelines by encouraging the construction of competing pipelines and facilities. To that end, the NGA was also amended to enable pipelines to acquire rights-of-way by eminent domain and to allow end users under some circumstances to change over to new pipeline suppliers. From that point on, gas pipelines were regulated entities which had all the rights and advantages of common carrier status without the corresponding obligations to transport products for the general public.

Despite these attempts to facilitate competition among pipelines, many producing areas are today still served by only one interstate pipeline and many newly emerging production areas will likewise be served by only one interstate pipeline, under conditions that discourage or prohibit other pipeline construction in the future.

The NGA was very successful with respect to another of its objectives, however, and that was to ensure that consumers received the benefit of low wellhead prices pipelines paid producers. In the early days, producers had no real idea of the value of their gas or considered it a nuisance so that its wellhead price was far below its real value. As pipelines were constructed to connect new sources of gas, the pipelines themselves continued to hold field prices artificially low because of the monopsony power described above. The NGA employed a form of economic regulation of pipelines known as "rate regulation" which limited the resale price of gas to a "just and reasonable" level. In practice, this meant that the FPC would approve a resale price that allowed the pipeline to recover its costs plus a reasonable rate of return. The effect of this form of regulation was to transfer from pipelines to consumers the benefit of the lower wellhead prices achieved through the pipelines' competitive advantage over producers.

In 1954 the United States Supreme Court held that wellhead prices were subject to FPC control under the NGA's "just and reasonable" standard, with the result that government regulation replaced pipelines' monopoly power and competitive advantage as the primary means by which wellhead prices were held artificially low.

While the NGA did not directly regulate intrastate gas pipelines, it nevertheless had a profound effect on them and facilitated a pronounced interstate/intrastate market dichotomy. Since transporting gas destined for interstate markets subjected pipelines to federal regulation, intrastate pipelines refused to transport gas for interstate pipelines. In addition, producers became fearful that they might become subject to federal pricing regulations if their gas was at some point commingled with interstate gas during transportation. Besides, producers who had a choice would usually sell to intrastate pipelines since there were no wellhead price controls in the intrastate systems. Consequently, producers began putting clauses in their contracts with pipelines forbidding them to sell gas to anyone subject to Natural Gas Act regulation. The effect of these actions of both pipelines and producers was to shift new gas to the intrastate market and create shortages in the interstate market. During the 1970's when interstate gas shortages were widespread, Congress acted to remedy the market dislocations by enacting the Natural Gas Policy Act of 1978, the NGPA.

C. The Natural Gas Policy Act Of 1978

After forty years of regulation of the natural gas industry under the NGA, the Congress finally succeeded in passing new legislation in 1978, the NGPA, as it is commonly referred to. The NGPA did not significantly alter the rate regulation structure of the NGA, but it did bring intrastate gas under the same price controls it imposed on interstate gas and established a seven year phaseout period for specified categories of natural gas, intrastate and interstate.

The NGPA did not provide any greater access to producers and users of natural gas than had existed under the

NGA, but it did reduce the competitive advantage previously enjoyed by intrastate systems since intrastates could no longer pay higher prices for new supplies than interstate pipelines. In fact, the NGPA has caused a severe imbalance of supply in favor of interstate systems, creating critical shortages in intrastate systems. Others testifying before this subcommittee today will speak directly to the problems now being encountered by intrastate pipelines and their customers due to the built-in bias of the NGPA diverting most new supplies to interstate pipelines.

One significant change brought about by the NGPA, a change that is becoming more important every day, relates to the pricing procedure pipelines use to pay for gas produced by an affiliate of the pipeline, so-called affiliate production. Under the Natural Gas Act, pipelines primarily utilized the cost of service method, under which costs of production were used as the price paid and factored into the pipeline overall operational costs for calculation of rate of return. In any case, under the NGA, and in fact until passage of the NGPA, unrealistically low wellhead price controls had caused price discrepancies in favor of production affiliates to be relatively minor. It is interesting to note that due to a recent decision by the Court of Appeals of the Fifth Circuit, production affiliates are now able to receive NGPA ceiling prices, to be passed along to consumers, for gas that has already been paid for by consumers in previous cost of service charges. Thus, pipelines will be allowed to pay their own affiliates, in many cases, higher prices than producers receive for gas of the same vintage even though producers took the risks of exploration, development, and production while pipelines shifted those risks to consumers. One pipeline revealed last week that this court ruling will increase its revenues by $94 million in 1982 and future years, in addition to allowing it to collect approximately $110 million from consumers for gas sold during 1979, 1980 and 1981. Already beleaguered consumers will now be in the unfair position of having paid for drilling failures while the benefits of drilling success accrue to the pipeline.

Under current regulations, all a pipeline has to do for a particular sale is show that it did not pay its affiliates more than the highest amount paid in comparable transactions with unaffiliated sellers. The pipeline is free to pass on to consumers the gas purchase costs for such purchases from affiliates unless the pipeline is guilty of "fraud, abuse or other similar grounds". This is a standard that the Federal Energy Regulatory Commission (FERC) has recently interpreted very narrowly, meaning that almost any price a pipeline pays an affiliate for gas is legal and can be passed on to consumers, even though pipelines may give preferential treatment to production affiliates with respect to non price elements such as the amount of gas the pipeline is obligated to take.

Many producers are being paid prices below established NGPA ceilings while production affiliates are receiving ceiling prices for each category because FERC allows the production affiliate to be paid the highest price being paid to any independent producer, not to all independent producers. Many gas contracts and amendments were and are being entered into with producers having no practical way of knowing the market for his production or for treatment being received by other producers. This occurs because of fear of antitrust implications of exchanging information. I am not offering any comment as to whether there are antitrust implications in exchanging this kind of information, but we think it is very pertinent to note that due to FERC protection, pipelines and their affiliates are able to have access to all contracts on their system and then use the most beneficial features of each. Our group feels that the acceptance by FERC of these practices allows the same kind of abuses to occur in gas that occurred early in the history of crude oil pipelines, before the trusts were broken and oil pipelines were classified as common carriers.

At the present time, then, the NGA and the NGPA combine to create a regulatory structure which effectively limits access to markets and supplies to pipelines while permitting pipelines to treat their own production affiliates preferentially. Because of this combination, we are seeing increases in gas prices consumers and distribution companies must pay pipelines, increases which are due to higher prices paid for deregulated gas owned or produced by the pipeline's production affiliate. Several of the Purchase Gas Adjustment proceedings of major pipelines are now being challenged by consumers, distribution companies and state utility regulatory bodies on the ground that prices paid for deregulated gas are too high and too much of that increased cost is going to the pipeline's production affiliate. Any modification of gas pricing laws should require that production affiliates be paid no more than the lowest price being paid to any independent producer for each category of gas. Classification of pipelines as common carriers would solve this market-ordering problem as explained later.

III. INEQUITIES DUE TO LACK OF ACCESS CAN ONLY INCREASE IN THE FUTURE

The NGPA's decontrol schedule does nothing to change the major regulatory deficiencies cited above. Pipelines cannot be required to transport gas owned by others and pipelines will continue to be able to give preferential treatment to their production affiliates. All segments of the gas industry will be adversely affected by this combination of regulatory features except interstate pipelines.

Intrastate pipelines will not be able to compete for gas supplies except those directly on their systems. Where those direct sources of supply are also served by an interstate pipeline, the interstate pipeline will have the advantage of lower priced old gas and can outbid the intrastate for new supplies. In addition, the tremendous gas supplies of the OCS will remain unavailable to intrastate systems and their customers. Finally, intrastate pipelines will be faced with declining sources of independent production as interstate pipelines increase the activity of their production affiliates in areas served in common with intrastate pipelines.

Distribution companies will continue being unable to develop and produce their own system supplies even though, as discussed above, the pipelines supplying them will be free to do so. Distribution companies will not be able to receive gas produced either by joint ventures with producers or by direct purchases from producers. Distribution companies will be stuck with the marketing policies and practices of the supplying pipeline, even if those policies and practices are contrary to the best interests of the distributor. The FERC has pending before it an application by a distribution company to open a rulemaking proceeding which would, among other things, provide that an interstate pipeline would have to transport gas owned by a distribution company.

Customers served by distribution companies will continue to be adversely affected by the lack of access of distribution companies as described above. Regional gas cost disparities will only increase under the current pipeline-dominated system with all of the attendant economic costs involved as industrial users react, often by moving to other locations. It should be obvious to anyone that it is cheaper to remove the barriers to gas shipment and ship gas rather than moving industries and shipping manufactured products. The plight of the fertilizer industry, with respect to gas supplies, demonstrates the folly that has often been the result of the natural gas infrastructure.

In addition, as gas prices increase through phased decontrol under the NGPA or otherwise, the existing form of pipeline regulation will not ensure that gas consumers receive the benefit of low prices paid to independent producers or low "takes" imposed on independent producers. Everyone acknowledges that there is a delivered price above which natural gas is not competitive with alternate fuels, generally accepted as approximately $7.00 per million Btu's (delivered). As long as pipelines keep the delivered price below that alternative fuel price, switching to alternative fuels will not take place. Pipelines can keep the delivered price below the alternative fuel price either by paying the same price or similar prices to all producers or by paying more to some than to others or by taking more gas from some than from others. If a pipeline pays producer A less than producer B for deregulated gas or takes more of producer A's gas than it takes of producer B's gas, there will be no benefit to the ultimate consumer of producer B having received a lower price than producer A or having sold less of its gas than producer A. That kind of pricing and volume preference is already happening with respect to deregulated gas produced from depths greater than 15,000 feet and with other incentive-priced gas. It is a trend that can only become more pervasive as interstate pipelines continue to increase their involvement in gas exploration, development and production. As a result, consumers can no longer be secure in the belief that rate regulation will preserve the benefits of pipelines driving hard bargains to obtain required levels of gas supply at the lowest possible price.

What is actually occurring today defies rational economics. The record is replete with situations where nonincentive gas priced much lower than incentive gas is not being taken or being taken in only minimal quantities. This situation exists in every producing area including California, the Rockies, the Gulf Coast, the upper

Midwest and the East. This is occurring because of the pipelines' strong vested interest in high cost gas, e.g., deep, decontrolled gas, Canadian imports and LNG. As previously discussed, under existing law, pipelines need only be concerned with keeping the final mixed gas price low enough to stay competitive with other fuels. They have carte blanc freedom to maximize their own corporate profits at the expense of both consumers and producers. It is unthinkable that there are no federal laws or regulations to present these inequities.

If a national market existed for gas -- which can only be accomplished by end users, distribution companies and other pipelines being able to negotiate directly with producers, and get the gas transported -- high cost gas could only be sold to those users willing to pay the price. If a market did not exist for high cost gas, its price would drop until it could find a market. Common carrier status would be a better market-ordering device than any incremental pricing scheme that can be devised and administered.

Direct end users of natural gas will have the same problems they have today in obtaining secure sources of supply or avoiding the adverse effect of incremental pricing. One very likely result is that end users will end up paying a delivered price for gas subject to curtailment that will be higher than the price independent producers are receiving from pipelines and higher than the price the user could have bought the gas for directly from the producer. These price comparisons are based on wellhead prices plus a reasonable transportation charge for user owned gas.

Independent producers will continue to be afforded very little protection by the NGPA requirement that amounts paid by interstate pipelines to its production affiliate may not exceed "the amount paid in comparable first sales between persons not affiliated with such interstate pipeline." As stated earlier, this requirement is considered satisfied if the pipeline pays its production affiliate a price no higher than it pays any nonaffiliated producer. Gas purchase negotiations are notoriously complex and resultant contracts are very difficult to analyze and compare with respect to indirect preferential treatment of one producer over another. This is particularly true when the NGPA requirement applies to only one of many important contract elements -- the price. There is no requirement that the pipeline take even one cubic foot of gas offered for sale by an independent producer or that the pipeline take any specified percentage of the gas it commits to buy at a stated price. It is well known within the industry that the best way to get the most favored gas contract is to take the pipeline's production affiliate as a partner.

Under these circumstances, independent producers will be faced with take-it-or-leave-it offers which might comply technically with NGPA requirements, but which do not provide equitable contract terms for the producer's gas. The incentive for this discrimination is obvious -- the pipeline can take a higher portion of gas from its own production affiliate, using independent production as its "swing supply", that is, to satisfy the periods of highest demand on the system. As long as the delivered price does not reach or exceed the alternative fuel price, pipelines will encounter no obstacles, regulatory or economic, in maximizing the profits of their production affiliates in the manner just described. Achieving maximum profits for a business is a legitimate and desirable objective, but when it is done through the use of monopoly power at both ends of the pipeline, it is totally contrary to all notions of fair play and protection of the public interest. This allows a regulated entity, the interstate pipeline, to convert the very regulations intended to protect the public interest to a means to increase the profits of its production affiliate.

IV. REMEDIAL ACTION: EQUAL ACCESS TO ALL GAS SUPPLIES

The deficiencies and abuses described above are so complex and interrelated that no system of regulation could be devised that would totally eliminate them and even if it could be devised, it could not begin to be administered effectively. As with most such attempts at system-wide regulation and enforcement, the cure is often worse than the problem and usually turns out to be ineffective after all. There is no need for the imposition of another comprehensive regulatory scheme and enforcement program in the gas industry. The solution lies in less regulation, not more, by amending applicable statutes to give all potential purchasers access to all gas supplies anywhere in the country and requiring pipelines to transport gas owned by others. This system could not be imposed on the pipelines overnight or all at once, but would have to be phased in over time to accommodate existing service obligations of pipelines. The phase in of this form of limited common carrier could be initiated by defining a particular category of gas that would be small in quantity at first but grow in volume over time as the only kind of gas that would be eligible for mandatory transportation. Pipelines would be allowed to continue to purchase all kinds of gas, including this category of gas, but once bought by another purchaser, such as another pipeline, a distribution company, or an end user, the pipeline would be required to transport that gas. The regulations that presently discourage transportation of non pipeline owned gas would have to be loosened to allow the pipeline to receive a just and reasonable tariff for that transportation service. These tariffs could be established in the same manner as the transportation tariff for other common carriers such as crude oil pipelines, railroads, etc.

This limited form of common carrier status can work since it would produce a national market for natural gas just as common carrier status for crude oil pipelines has achieved a national market for crude oil. It would impose far less regulatory restraints and requirements than any other change in the present pipeline regulatory structure and would result in maximum utilization of this country's natural gas resource in a manner that would spread the benefits of gas production fairly throughout the system without unfairly burdening any element of the system. It would benefit consumers since their local distribution companies would have more control over their gas acquisition costs. It would solve the market-ordering problem since high cost gas from any source could not be forced on consumers.

To be sure, there are tough problems, many of them, that would be encountered in the transition from the current system to the equal access system NGEA advocates. But those problems will be less severe than the problems that will be generated if the natural gas industry enters the era of greater deregulation under a pipeline regulatory structure developed for the 1930's.

Thank you again, Mr. Chairman, for the opportunity provided to NGEA to submit this statement on an extremely important matter. We would be pleased to answer any questions you or other members of the Committee may have. Thank you.

NATURAL GAS PRICE DEREGULATION:
A CASE OF TRICKLE UP ECONOMICS

Prepared by:

CONSUMER ENERGY COUNCIL OF AMERICA
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NATURAL GAS PRICE DEREGULATION: A CASE OF TRICKLE UP ECONOMICS

I. GENERAL INTRODUCTION

The decontrol of natural gas prices may be the single most important energy policy decision of the 1980s. Natural gas is the dominant household fuel. With more than half the households in America heating, cooking and heating water with natural gas, it accounts for almost 55 percent of all the energy used in the home.[1] Natural gas is also a prime industrial fuel, accounting for 31 percent of all the energy consumed by industry.[2]

Since many of the uses of natural gas are vital to basic daily activities and economic processes, the decontrol of natural gas prices could have a greater impact on the nation's consumers and the economy than any other energy pricing policy decision. Thus, any decision to decontrol natural gas should be based on a careful, rigorous and objective analysis of the costs and benefits that will flow from such a decision. This is no easy matter.

Responsible analysis of natural gas decontrol is an extremely complex task. The natural gas market itself, as well as the link between energy and the economy, is complicated and not well understood. Beyond that, the impact of rising prices on the distribution of wealth is difficult to measure. Finally, the special interests involved in any decision to decontrol are extremely powerful and passions run high because so much is at stake. A great deal of information (and misinformation) must be sorted out, analyzed and evaluated in order to conduct a proper analysis.

Fortunately, the analysis of the decontrol of natural gas need not be based on pure theory or guesswork. Over the past decade, because energy policy has been such a critical issue, the analytic tools used to examine policy decisions have been greatly improved. Moreover, in the last five years the nation has experienced four major decontrol decisions: heating oil (May 1976), natural gas (August 1978), crude oil (June 1979) and gasoline (January 1981). A track record has been established which should shed considerable light on how the energy markets and the economy behave in the wake of decontrol. It should also give clues to which tools and approaches best predict the outcome.

With this report, the Consumer Energy Council of America Research Foundation (CECA/RF) initiates a series of studies which will examine the history of oil decontrol and predictions about natural gas decontrol. CECA/RF's series of studies will review the record of price projections and price increases, the supply and demand responses and the economic and equity impacts of crude oil decontrol and contrast them with the various projections for natural gas decontrol. Future reports will also examine the potential and actual effects of windfall profits taxes.

This initial report, however, takes a somewhat different approach. It examines basic philosophical, theoretical and technical aspects of the Department of Energy's most recent analysis of natural gas decontrol.[3] We believe that there is a message of such shocking significance in the DOE analysis -- that natural gas decontrol isn't trickle down economics, it is trickle up economics -- that we will postpone discussion of a number of issues (such as price projections, supply and demand elasticities, etc.) which should be dealt with first, and move directly to the heart of the matter.

A. The Department of Energy's Natural Gas Analysis

1. DOE's Natural Gas Market Model

The Department of Energy's study of natural gas decontrol consists of two separate analytic exercises. The first exercise involves an attempt to model the natural gas market.[4] That is, using certain assumptions about production costs, the geological availability of gas and the economic demand for gas, DOE predicts the supply of and demand for gas under various decontrol scenarios.

2. DOE's Macroeconomic Impact Analysis

In the second exercise, DOE uses the supply, demand and price predictions from its natural gas modeling exercise above as inputs into the analysis of the macroeconomic impact of decontrol.[5] The objective is to predict the impact of decontrol on the Gross National Product (GNP), inflation, employment and other measures of the performance of the economy.

For the purposes of the macroeconomic analysis, DOE uses three different models, one of which is called a supply-oriented model and two of which are called demand-oriented models. The difference between the models, as DOE sees it, is as follows:

a. Supply-Side Model

The supply-side model (specifically the Hudson/Jorgenson Dynamic General Equilibrium Model) is driven by supply conditions -- the productivity conditions in the economy and changes in the supply of inputs for production (i.e., the factors of production, capital and labor). To simulate the impact of decontrol, that impact is measured by changes in potential GNP (the output that could be achieved if all factors of production were fully utilized).

b. Demand-Side Models

The demand-side models (specifically the Wharton Annual and Industry Forecasting Model [WAIFM] and the DRI Model) are driven by demand conditions -- the level of aggregate demand -- to simulate the impact of decontrol. The impact is typically measured by changes in actual GNP, consumption and employment.

DOE's preference for the supply-oriented model is quite evident in its discussion. This report will demonstrate that the differences in the output of the models are not as great as DOE suggests and that they are really related to a rather different factor -- an assumption about the wage-price spiral.

Each of the analyses, as well as the interconnection between them, is extremely complex. However, careful reading of all of DOE's natural gas analyses (in addition to the study itself, there are four appendices as well as several attachments and annexes) reveals numerous points at which critical assumptions are made by DOE which dictate the nature of the results. At each of these points, the assumption chosen by DOE is highly favorable to decontrol. We have grave doubts about DOE's assumptions in both the natural gas market analysis and in the macroeconomic analysis and we believe that these assumptions call into question the value of the entire analysis for decisionmaking.

It would be most logical to begin CECA/RF's series with a critique of the gas market model and then examine the macroeconomic analysis. However, we believe that there is a message about supply-side economics in DOE's study that is of such overwhelming importance that we will devote our first report to a discussion of DOE's macroeconomic analysis. In other words, for the moment, we will not question DOE's assumptions and projections about the gas market and will concentrate instead on the implications of a so-called "supply-oriented" natural gas policy for the economy.

B. The Basic Message: Trickle Up Economics

Supply-side economics is typically presented as a strategy for increasing the national economic pie. By creating incentives to save and invest, it is argued that all members of society can be made better off. That is, the pie gets bigger and everyone can benefit by taking a bigger piece. However, in order to expand the pie, it is necessary to transfer resources from those with a high propensity to consume (low and moderate income groups) to those with a high propensity to save (high income groups).[6] In the first instance, then, it is a small group that benefits. It is only at some later date, if output expands and if resources "trickle down," as David

Stockman admitted in the widely publicized December 1981 Atlantic Monthly article, that the great majority of citizens can benefit.

In fact, DOE's own analysis of natural gas decontrol shows that supply-side economics in the natural gas market is not trickle down economics at all -- it is trickle up economics. With a massive transfer of wealth to gas producers, DOE's analysis shows that the pie might get a little bigger, but even after 15 years only those who own gas related capital services (i.e., owners of gas industry stocks) will be better off. Everyone else, i.e., labor and owners of non-gas related capital services, would still be worse off even after 15 years.

That this outcome is abundantly clear, even granting DOE's optimistic assumptions, should be a cause of concern to both the supporters and opponents of supply-side policy. Let us look at this troubling result in detail.

II. THE IMPACT OF DECONTROL

A. Details of the Analysis

Table 1 presents the results of DOE's analysis of the impact of full decontrol on the aggregate GNP and the distribution of income between owners of capital and labor. Potential GNP is projected to increase by $41 billion -- or half a percent -- over the 15 year period (in constant 1980 dollars). Labor's gross income is projected to decline by $53 billion. The income of non-gas-related capital is projected to decline by $28 billion, while the income of gas-related capital is projected to rise by $122 billion.

Table 2 presents the results of DOE's analysis of accelerated/phased decontrol (a scenario for decontrol that closely approximates the proposals being discussed for legislation in early 1982). Potential GNP is projected to increase by $38 billion (1980 dollars) over the 15 year period. Labor's gross income is projected to decline by $35 billion, while that of non-gas-related capital is projected to decline by $21 billion. The income of gas-related capital is projected to rise by $95 billion.

To summarize this result simply, for every one dollar of additional income that holders of gas-related capital gain, labor loses fifty cents and holders of non-gas-related capital lose twenty-five cents. Supply-side magic (i.e., increasing investment) creates the

Table 1

SUMMARY OF THE MACROECONOMIC EFFECTS OF
FULL DECONTROL IN 1982 OF NATURAL GAS PRICES
(Billions of 1980 Dollars)

Changes from the current policy situation in:

	Real GNP	Gross Income		
		Labor	Capital	
			Gas-Related	Other
1982	- 8.5	-37.1	+33.4	- 4.8
1983	- 6.7	-33.0	+30.5	- 4.3
1984	- 5.5	-30.0	+29.3	- 4.8
1985	- 3.9	+ 0.9	+ 4.1	- 1.1
1986	+ 5.1	+ 2.3	+ 4.3	- 1.4
1987	+ 5.7	+ 3.7	+ 3.4	- 1.4
1988	+ 5.1	+ 3.7	+ 2.7	- 1.2
1989	+ 5.7	+ 4.4	+ 2.7	- 1.2
1990	+ 6.0	+ 5.0	+ 2.3	- 1.2
1991	+ 5.3	+ 4.6	+ 2.0	- 1.2
1992	+ 6.0	+ 5.1	+ 2.1	- 1.2
1993	+ 6.6	+ 6.9	+ 0.9	- 1.2
1994	+ 6.0	+ 5.1	+ 2.3	- 1.4
1995	+ 6.0	+ 5.1	+ 2.1	- 1.2
Cumulative Effect	+40.7	-53.3	+122.1	-27.8

Source: U.S. DOE, Macroeconomic Consequences, p. I-ii.

Table 2

SUMMARY OF THE MACROECONOMIC EFFECTS OF PHASED DECONTROL OF NATURAL GAS PRICES (Billions of 1980 Dollars)

Changes from the current policy situation in:

	Real GNP	Gross Income		
		Labor	Capital	
			Gas-Related	Other
1982	- 3.4	-14.7	+ 13.1	- 1.8
1983	- 6.2	-25.6	+ 22.4	- 3.0
1984	- 6.7	-30.3	+28.2	- 4.6
1985	+ 3.9	0.0	+ 4.8	- 0.9
1986	+ 5.3	+ 1.6	+ 5.1	- 1.4
1987	+ 5.1	+ 2.8	+ 3.7	- 1.4
1988	+ 4.6	+ 3.0	+ 2.7	- 1.1
1989	+ 5.1	+ 3.5	+ 2.7	- 1.1
1990	+ 5.3	+ 4.1	+ 2.5	- 1.2
1991	+ 4.6	+ 3.7	+ 2.0	- 1.1
1992	+ 5.3	+ 4.3	+ 2.0	- 1.1
1993	+ 4.3	+ 3.5	+ 1.4	- 0.7
1994	+ 5.3	+ 4.3	+ 2.1	- 1.1
1995	+ 5.3	+ 4.4	+ 2.0	- 1.1
Cumulative Effect	+37.8	-35.4	+94.7	-21.4

Source: U.S. DOE, Macroeconomic Consequences, p. I-43.

additional twenty-five cents that owners of gas-related capital gain. That is, the pie may get a little bigger as a result of decontrol, but just about everyone will get a smaller piece. In fact, the transfer of resources (the losses in income of labor and owners of non-gas industry stock) is nearly twice as large as the increase in the total pie (the increase in GNP). Moreover, these are the bottom line results after all costs and benefits of decontrol have been considered.

1. Impact on Labor and Other Sectors

According to DOE's study, the magnitude of the gains and losses is quite similar under either full or phased decontrol. The pattern of losses is also similar in both cases. Labor loses big in the first three years, then recovers slightly, but still remains the biggest loser. Labor's losses in the first three years total over $100 billion (in constant 1980 dollars) for full decontrol and $70 billion for phased decontrol.

Holders of non-gas-related capital are small but steady losers. Their income is reduced every year for the entire 15 year period. The losses in income appear to be concentrated in industries which are presently under the greatest pressure -- automobiles, home building and agriculture. Those losses are greatest in the early years.[7]

2. Impact on Productivity and Gas Production

It is also important to recognize that, according to DOE's analysis, these effects of decontrol -- the small increase in the total pie and the much larger redistribution in income -- would occur without increasing the amount of natural gas produced and without increasing productivity in the economy (see Table 3). In fact, productivity would actually decline.

The loss of GNP due to the reduction in productivity that would result from decontrol would be between .5 and 1 percent over the 15 year period. The losses would be concentrated in the early years. Further, although decontrol would lead to greater supplies of gas in the early years, these would be offset by lower supplies in the later years and total supply over the period would be about 1 percent lower than under continuation of the Natural Gas Policy Act.

In sum, there could be no better example of a policy which is purely a redistributive scheme than natural gas decontrol. Unfortunately, although this decidedly negative message is buried in DOE's technical analysis, it is not fully reflected in DOE's presentation of the policy alternatives. Because it is not, the presentation of the policy alternative may mislead decisionmakers. The next section examines how the message was obscured.

Table 3

SUMMARY OF THE EFFECT OF DECONTROL ON PRODUCTIVITY AND NATURAL GAS PRODUCTION

	Changes in Productivity[1] (from base, in %)		Domestic Supply of Natural Gas[2] (in Billion Cubic Feet)		
	Full Decontrol	Accelerated/ Phased Decontrol	NGPA Unmodified	Full Decontrol	Accelerated/ Phased Decontrol (All New)
1982	- .32	- .13	18,147.6	18,426.9	18,243.9
1983	- .34	- .26	17,365.4	17,906.9	17,815.0
1984	- .37	- .34	16,881.8	17,611.5	17,544.2
1985	- .08	- .02	17,161.6	17,324.6	17,118.7
1986	- .07	.02	17,431.2	17,289.8	17,167.7
1987	- .03	.01	17,890.2	17,440.6	17,386.6
1988	- .02	- .01	17,884.3	17,539.2	17,524.6
1989	- .01	+ .01	17,803.8	17,436.7	17,364.4
1990	0	+ .03	17,649.7	17,144.5	17,185.2
1991	- .01	+ .01	17,487.9	17,108.5	17,161.6
1992	+ .02	+ .04	17,430.8	16,929.5	16,992.8
1993	+ .05	+ .01	17,266.3	16,926.2	16,996.8
1994	+ .04	+ .04	17,245.5	16,719.8	16,799.5
1995	+ .04	+ .04	17,164.7	16,655.8	16,734.8

[1] U.S. DOE, Macroeconomic Consequences, pp. I-39, I-45

[2] U.S. DOE, Two Market Analysis, Attachment 4.

B. DOE's Sleight of Hand

The negative implications of decontrol have been submerged by DOE because of its subjective interpretation and selective presentation of its own evidence. It has chosen as its central criterion for policy evaluation the behavior of potential GNP in the long term, rather than the behavior of actual GNP in the short and mid terms or the distributive effects of decontrol. Furthermore, it tailors the evidence presented to this preconception.

1. Differential Treatments of Changes in GNP

For example, the Department of Energy treats a $10 billion (discounted 1980 $) potential expansion in GNP over a 15 year period as a major benefit, while it treats a possible loss in GNP of $18 billion over a three year period as small and insignificant:

> Full decontrol in 1982 creates substantial efficiency benefits: $10 billion (NPV) compared to current policy and $41 billion (NPV) when compared to continued controls to 1995. These efficiency gains are significant and play an important role in the analysis of macroeconomic effects of full decontrol. The efficiency gains are robust with respect to varying assumptions about world oil prices and gas market conditions. 8
>
> Full decontrol of natural gas prices could also have short-term impacts on measured inflation, actual output, and unemployment. These effects are not likely to be large and should fade over time. . . . Immediate decontrol is also estimated to reduce real GNP by .2 to .6 percent ($6 to $18 billion in 1980 $) and raise the unemployment rate by .1 to .2 points in the first three years of decontrol. 9

In point of fact, the analysts who generated the numbers upon which DOE opted to base its analysis (because they come from a so-called supply-oriented model) stated quite the opposite. First, the report of these analysts repeatedly points out that both the potential aggregate GNP costs and benefits were quite small.

> None of the consequences of accelerated decontrol is large; the costs are relatively small and shortlived, while the benefits are even smaller but sustained. 10

Furthermore, the same report noted that one really had to go far out in the future to reverse the negative effects:

> It is important to note however, that the projection horizon must be extended to 1990 before the early losses are offset by subsequent gains. It takes about nine years for the overall effects to become positive (in present value terms). 11

2. Denial of Income Transfer Effects of Deregulation

Even more misleading in DOE's analysis is the fact that DOE simply denied the existence of the evidence on the distributive effects of the policy. DOE claims to be uncertain about those effects:

> Although the net benefits of full decontrol in 1982 are $10 billion (NPV), the distribution of the costs and benefits is likely to be uneven. It is difficult to estimate the magnitude and the distribution of these effects among different sectors of the economy, regions, and social and economic groups. The macroeconomic and efficiency analyses show that all families could be made better off as a result of decontrol. 12

The analysts who generated the numbers were emphatic and insistent about the distribution of costs and benefits:

> Thus, accelerated decontrol involves a relative shift of real income or purchasing power from the owners of labor services to the owners of capital services and, among the latter, from the owners of other capital assets to those having claims on the capital associated with domestic gas supply. 13

Other biases in DOE's analysis lie in its differential treatment of macroeconomic models and the shifting of time frames in which the models are applied.

The supply-side model, which has been little used for analysis such as this, is presented without discussion of its limitations or caveats. Needless to say, it produces the most favorable results. The more traditional models (referred to as demand-oriented) are criticized severely. There is really little reason to assume that the supply-side model is any less subject to doubt than the other models. In fact, as will be shown below, the differences between the models have been exaggerated and can be easily explained.

Furthermore, the most favorable model is run over a long time frame (for decontrol compared to present policies) in order to let small positive factors build up to erase the initial negative factors. The less favorable models, which begin to show small negative impacts in later years (for decontrol compared to present policies), are run over a shorter time frame. There are some very good reasons to believe that decontrol would lead to negative impacts relative to continuation of present policies in the late 1980s and after. As noted above, the continuation of present policies would bring more gas to market in that later period. Thus, the possibility that present policies will be preferable to decontrol in that period is real. The shifting of time frames in DOE's analysis obscures what may be a legitimate and important difference in the estimation of effects.

Amid this obfuscation it is difficult to assess properly the econometric results. A careful review of the output of all the models employed by DOE and the assumptions on which they are based shows that (1) they are not all that different and (2) the differences that exist are theoretically and technically explicable. The next section will analyze DOE's models with the objective of clarifying, rather than obscuring, their important features and pinpointing the message they send about supply-side economics in the natural gas market.

C. The Econometric Results

1. Similarities and Differences

For all the fuss made about differences between the supply-oriented and the demand-oriented approaches, there simply is not that much difference between the two sets of results for full decontrol (see Table 4). Over a comparable time frame (9 years), projected changes in GNP

Table 4

THE MACROECONOMIC EFFECTS OF FULL DECONTROL DEPICTED IN THREE DIFFERENT MODELS
(Change from Base Case) 1/

	GNP (Percent)			Inflation (Percentge Points)			Labor			Investment (Percent)		
	H/J	D	W	H/J	D	W	H/J 2/	D 3/	W 3/	H/J	D	W
1982	- .31	- .32	- .4	2.18	1.7	2.5	.01	.1	.2	3.81	-1.1	- .1
1983	- .24	- .61	- .4	- .33	.7	.4	- .03	.2	.1	3.28	-2.1	- .5
1984	- .19	- .43	- .2	- .24	.1	.2	- .05	.2	0	3.35	-1.4	1.8
1985	.13	.13	.4	-1.72	- .9	-2.0	- .11	0.0	- .3	.41	.1	3.1
1986	.17	.37	- .3	- .06	- .9	- .5	- .10	- .1	.1	.40	1.2	- .3
1987	.18	- .08	.1	- .06	.2	- .3	- .08	- .1	- .1	.31	.3	1.2
1988	.16	- .07	.1	0.0	.1	0.0	- .09	- .1	- .1	.21	0	1.6
1989	.17	- .13	0.0	- .02	- .1	- .2	- .08	0.0	- .1	1.2	- .1	1.0
1990	.18	- .17	- .2	- .01	- .1	0.0	- .07	0.1	.1	.16	-0.2	0.0
Cumulative Impacts	Billions of Constant 1980 $			% Change			Job Losses (in thousands)			Billions of Constant 1980 $		
3 year	-20.7	-39.7	-27.7	+1.61	+2.5	+3.1	100	500	300	46.10	-13.1	1.6
9 year	+10.8	-40.5	-24.0	-.3	.8	.1	700	300	0	54.0	-19.5	44.7

Explanatory Notes:

1/ H/J = Hudson/Jorgenson; W = Wharton; [illegible] = DRI
2/ Measured as percent decrease in labor [illegible]ply.
3/ Measured as percentage point increase in unemployment.

range from +10.8 billion (constant 1980 $) to -40.5 billion (constant 1980 $). Although these numbers may sound large, they constitute less than one quarter of a percent of GNP. All models agree on fairly substantial negative GNP impacts in the first three years. The supply-side model predicts a loss of $20.7 billion, while the largest loss predicted by the demand side models is $39.7 billion. Again, the numbers may sound large, but they present a small fraction of GNP. Further, note that the direction of the predicted impact is the same -- negative.

The demand-oriented models produce slightly longer runs of increasing inflation in the early years. But all models predict a sizable increase in inflation. The three models differ somewhat in their predictions of the three year impact on inflation (increases ranging from +1.6 percentage points to +3.1 percentage points) and their nine year predictions (-.2 percentage points to +.4).

If there are major differences in the models, they occur in the labor and investment areas. The supply-side model shows a continuous and steady decrease in labor supply and a continuous increase in investment. The decrease in the labor supply is about 100,000 person years in the short term and 700,000 in the longer term. The increase in investment is on the order of $50 billion in both the short and long terms. By implication, investment in the model is treated as energy saving and labor saving.

The demand-side models show somewhat different patterns of unemployment and investment. There is a net increase in unemployment which parallels the net decrease in labor supply projected by the supply-side model. However, the pattern is somewhat different. The demand-oriented models show larger job losses in the short term (300,000-500,000) than in the long term (0-300,000). In the long term, there is a small decrease in investment in one demand-oriented model ($13 billion) and an increase in the other ($45 billion). There is a major difference in the short term effects of decontrol on investment in the demand-side models when compared to the supply-side models. The supply-oriented model shows a large rapid increase in investment, the demand-oriented models do not. One shows a very slight increase, the other shows a large decrease. The analysis of accelerated/phased decontrol exhibits similar patterns (see Table 5).

2. Explanation of the Differences

It is easy to attribute the different behavior of labor and investment to the basic philosophy underlying the models. The supply-side model was premised on a transfer of wealth from consumers (labor) to producers (investors) which was assumed to be productive. The differences in results are consistent with this philosophy. In fact, this philosophical difference is embodied in a simple technical assumption made by the

Table 5

THE MACROECONOMIC EFFECTS OF PHASED DECONTROL
DEPICTED IN TWO DIFFERENT MODELS 1/
(Change from Base)

	GNP (Percent)		Inflation (Percentage Points)		Labor		Investment (Percent)	
	H/J	D	H/J	D	H/J[2]	D[3]	H/J	D
1982	- .12	- .03	-	.2	.01	0.0	1.53	-
1983	- .22	-.23	-	.8	- .01	.1	2.40	-
1984	- .23	- .51	-	.8	- .01	.2	3.22	-
1985	.13	- .29	-	- .9	- .08	.2	.50	-
1986	.18	+ .19	-	- .7	- .07	0.0	.51	-
1987	.16	+ .22	-	- .1	- .07	- .1	.34	-
1988	.14	.04	-	.1	- .07	- .1	.22	-
1989	.15	0.0	-	0.0	- .07	0.0	.21	-
1990	.16	- .03	-	- .1	- .06	0.0	.17	-
Cumulative Impacts	Billions of Constant 1980 $		% Change		Job Losses (in thousands)		Billions of Constant 1980 $	
3 Year	-16.3	-22.5	na	1.8	10	300	31.6	na
9 Year	+13.1	-18.1	na	.1	430	300	41.4	na

Explanatory Notes:
1/ H/J = Hudson/Jorgenson; W = Wharton
2/ Measured as percent decrease in labor supply
3/ Measured as percentage point increase in unemployment

authors of the econometric models. The supply-side model does not allow a price-wage-price spiral to occur:

> Further, no price-wage-price spiral mechanism is included. This limits the process of adjustment and, hence, the overall price impact to that which is solely attributable to the change in gas policy. 14

The demand-oriented models do permit price-wage-price spirals:

> In WAIFM [Wharton Annual and Industry Forecasting Model], all cost changes are passed through to the final product prices immediately. Consumers must pay higher gas bills and face higher prices for other goods and services. These direct and indirect price effects are only part of the final price increase. Seeing their real income fall, workers demand higher wages. Wage increases, in turn, increase the costs of production and product prices in future periods, generating a wage-price spiral. 15

As the supply-side analysts noted, excluding the price-wage-price spiral dampens the projected inflationary impact. In fact, it does much more. It also dampens the negative impact of decontrol on GNP (technically speaking, the aggregate supply curve does not shift as much as it would with the spiral mechanism). More importantly, the exclusion of a price-wage-price spiral ensures that labor will suffer a real loss in income. That is, it is necessary to preclude the spiral mechanism in order to shift resources to investors.

The so-called demand-oriented models actually assume that, in the short term, wages do not keep up. That is why the initial reduction in real income occurs. The models also assume that, in reality, in the long run, wages do try to keep up with prices. The difference between the models comes down to whether or not labor will respond to the increase in prices (and producer revenues) by attempting to offset their losses through wage increases and how effective labor will be in so doing. The supply-side model assumes that labor will be totally unsuccessful, even in the long run. The demand-side models assume that labor will not be successful in the very short run, but will be largely successful in the long run.

There are certainly other points of difference between the models, but this one difference should account for the majority of the differences in their output.

One can genuinely question the meaningfulness of conducting any analysis without some price-wage-price mechanisms. Although the supply-side analysts assert that omitting a price-wage-price spiral isolates the impact of decontrol, in fact it tests the impact of decontrol in a world that does not exist. The analysis excluding the price-wage-price mechanism would, at best, be an interesting sensitivity case, but it should not be the base case for drawing policy conclusions.

What makes this approach even more troubling is that DOE does not hesitate to criticize the so-called demand-oriented models for being unrealistic, and it did not hesitate to alter basic features of the models to make them accord with its conception of reality. To some extent, the alterations were called for. The models assumed, incorrectly, that industrial users are at their optimum use of gas; the models, therefore, predict incorrect responses to decontrol. DOE properly alters the assumptions and changes the direction of the models' responses.

Shouldn't DOE have exercised its judgment and modified the supply-side assumption which contends there is no price-wage-price mechanism? Such an assumption is certainly no more realistic than the assumptions in the demand-side models which DOE criticized and changed. In other words, doesn't the supply-side model assume, incorrectly, that there is no price-wage-price spiral and, therefore, make incorrect predictions?

The net effect is to render the overall conclusions reached by DOE quite unrealistic. In particular the positive effects of decontrol predicted by the unrealistic supply-side model must be questioned.

III. CONCLUSION

Having analyzed and interpreted the output of DOE's econometric models and reconciled some of the differences between them, it is important to stress again that we do not necessarily agree with DOE's specification of the input to those models. The output of the Gas Market Model, which is imposed on the econometric models, will be discussed in subsequent papers in CECA/RF's series. As noted above, this output repeatedly errs on the side of extreme optimism with respect to the effects of decontrol. If the optimistic assumptions prove unrealistic, then the negative impact of decontrol predicted by the macroeconomic models would be even larger.

Notwithstanding this note of caution, the message of overwhelming importance in DOE's analysis is that even with its optimistic assumptions, the negative impacts of the supply-side approach are undeniable. Massive transfers of wealth will occur, with little increase in GNP, no increase in gas supplies, declining productivity in the overall economy, and losses in income by most groups in society that dwarf any gains in GNP. The theoretical argument is trickle down in nature; the analytic work suggests the policy would be trickle up in effect.

FOOTNOTES

[1] U.S. Department of Energy, Residential Energy Consumption Survey, Part I, National Data, April 1981, Table 1.

[2] U.S. Department of Energy, Monthly Energy Review, October 1981, pp. 23, 25. This percentage is based on the industrial sector direct consumption for all energy except electricity plus the indirect consumption of natural gas for electricity generation.

[3] U.S. Department of Energy, A Study of Alternatives to the Natural Gas Policy Act of 1977, November 1981; Two Market Analysis of Natural Gas Decontrol: Appendix A, November 1981; Macroeconomic Consequences of Natural Gas Decontrol, Appendix C, November 1981.

[4] U.S. DOE, Two Market Analysis.

[5] U.S. DOE, Macroeconomic Consequences

[6] Hudson/Jorgenson Associates, contractor for DOE's supply-oriented study, states the argument tersely for the case of natural gas price decontrol. In the natural gas case, household consumption goes down, while industry income (therefore savings and investment) goes up (U.S. DOE, Macroeconomic Consequences, I-24):

> Accelerated decontrol promotes an expansion in the productive capacity of the economy as real investment in all years is higher than in the Reference or present policy case. . . . All other things being equal, the change in capital supply increases the output and real income that the economy can achieve. Indeed, this rise in capital availability is the principal mechanism that reduces the earlier economic costs and secures the continuing economic benefit of accelerated natural gas price decontrol.
>
> In the 1982 to 1984 period, private savings and investment increase substantially. There is a substantial rise in gas-related capital income, i.e., income to gas suppliers. That is reflected in higher dividends from and retained earnings in these industries. The upward movement in prices also leads to some increase in other capital income and nominal rates of return. From each of these sources there is a rise in private income. Decontrol leads to higher energy prices, to higher costs and to higher output prices, raising the

average price of consumption goods and services. Households increase their consumption outlays but not by enough to offset the higher prices (there is a small reduction in real consumption).

[7] Ibid., p. III-19.

[8] U.S. DOE, A Study of Alternatives, p. 23.

[9] Ibid., p. 27.

[10] U.S. DOE, Macroeconomic Consequences, p. I-15.

[11] Ibid., p. I-iii.

[12] U.S. DOE, A Study of Alternatives, p. 30.

[13] U.S. DOE, Macroeconomic Consequences, p. I-iii.

[14] Ibid., p. I-18.

[15] Ibid., p. III-10.

THE PAST AS PROLOGUE I

THE UNDERESTIMATION OF PRICE INCREASES IN THE DECONTROL DEBATE:

A Comparison of Oil and Natural Gas

Prepared by:

CONSUMER ENERGY COUNCIL OF AMERICA

RESEARCH FOUNDATION

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THE PAST AS PROLOGUE I

THE UNDERESTIMATION OF PRICE INCREASES IN THE DECONTROL DEBATE:

A Comparison of Oil and Natural Gas

Introduction

One of the most critical issues in estimating the impact of energy price decontrol decisions is the projection of the magnitude of the price increase that will flow from each policy alternative. The size of the price increase determines the impact of decontrol on the economy and on the distribution of national wealth (equity). In other reports, the Consumer Energy Council of America Research Foundation (CECA/RF) analyzes the economic and equity impacts of rising energy prices. This report focuses on the issue of making realistic price projections. This must be the starting point for any impact analysis.

It should be noted at the outset that predicting energy price changes as a result of decontrol is an "iffy" business. Due to the fact that many unpredictable variables affect energy prices, projections typically have a wide margin of error. Moreover, matters are made worse by the fact that those who support decontrol of energy prices are likely to underestimate price increases; by the same token, those who oppose decontrol are likely to overestimate them. The combination of genuine uncertainty in the energy market and self-interested bias in much of the data makes it extremely difficult to sort out the good from the bad price projections.

Fortunately, however, we no longer have to approach energy price predictions in a vacuum. Over the past decade three different administrations have made energy decontrol decisions. There is a record of the predictions made prior to those decontrol decisions and the reality of the price increases that resulted from decontrol. By comparing the two, we can glean at least some idea of the magnitude of error in each set of predictions. Further, if the errors can be related to logical or systematic factors, our ability to predict future prices will be improved by analyzing and studying them. In particular, we can learn which assumptions appear to be most appropriate for making predictions.

In this report the Consumer Energy Council of America Research Foundation examines the track record of previous oil decontrol decisions and draws some implications for the analysis of natural gas decontrol.

The Track Record of Oil Decontrol

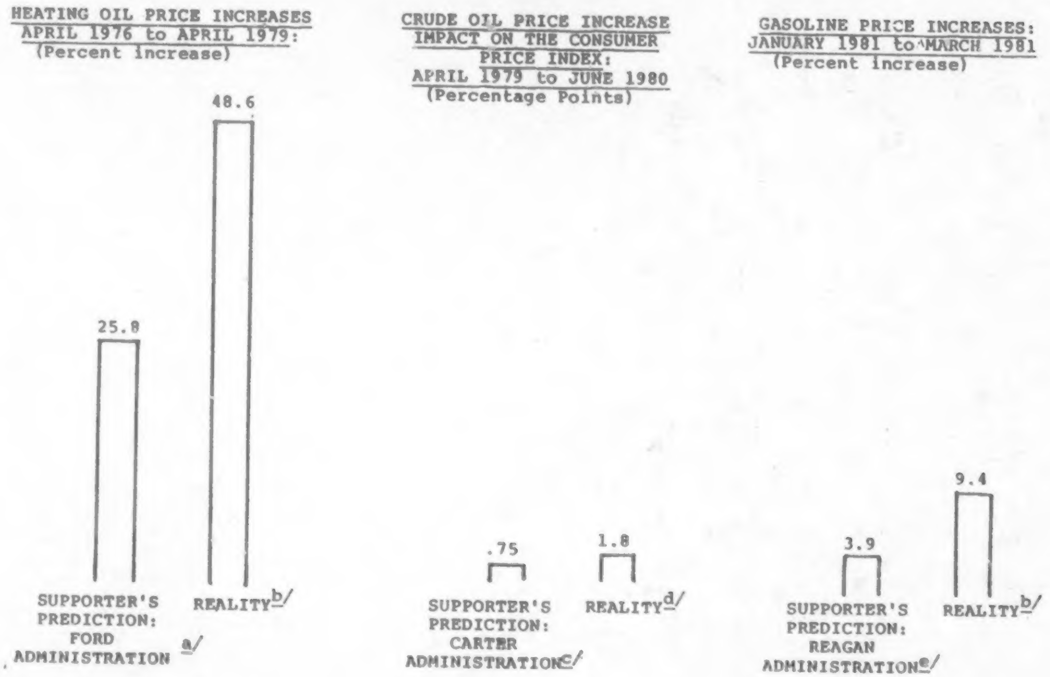
In 1976, the Ford Administration decontrolled heating oil prices. In 1979, the Carter Administration initiated the phased decontrol of crude oil prices. In 1981, the Reagan Administration finalized the decontrol of gasoline prices. (Actually, the Reagan Administration finalized the phase-in of crude oil price decontrol, but, since gasoline was the only controlled product at that time, in effect it decontrolled gasoline prices.) On each occasion a prediction was made about the price increase and/or the inflationary impact that would ensue. As Figure 1 shows, the record of those predictions is uniformly dismal. Predicted price increases were about one-half of the actual increases. Below CECA/RF examines the basis for the predictions and/or their errors in order to gain an important insight into energy pricing behavior.

Carter's Failure

The Carter Administration's failure to predict the impact of decontrol can be partly attributed to the erratic behavior of foreign oil prices, although one should not discount the role of domestic/ multinational oil corporations in paving the way for the supply shortage of 1979.[1] Nevertheless, a great deal of the rhetoric surrounding crude oil decontrol was that competitive pressures and the release of market forces would moderate price increases.[2] These forces certainly did not provide much price protection and one must question whether, in fact, they exist at all. However, because foreign oil prices were rising rapidly, the decontrol of crude oil under President Carter does not serve as a good test of whether market forces can moderate price increases in energy markets. On the two other occasions of oil decontrol, however, the errors in prediction cannot be attributed to foreign price increases.

FIGURE 1

COMPARING PREDICTED AND ACTUAL PRICE INCREASES ASSOCIATED WITH THE VARIOUS STAGES OF OIL DECONTROL



SOURCES: See following page

NOTES TO FIGURE 1

[a] Gorman Smith, "Hearings," Committee on Interstate and Foreign Commerce, H.R. Doc. No. 9121-131 (June 22, 1976), p. 38.

[b] MER, various issues.

[c] "Testimony of Charles L. Shultze, Chairman, Council of Economic Advisors, before the Joint Economic Committee, Subcommittee on Energy, U.S. Congress, April 25, 1979.

[d] Congressional Budget Office, letter from Alice M. Reinlin to Senator Edward M. Kennedy, "Impact of Enerlgy Prices and Inflation on American Families," hearings before the Subcommittee on Energy of the Joint Economic Committee, Congress of the United States, July 8, 1980.

[e] Wall Street Journal, "Decontrol of Oil Prices Expected Today," January 28, 1981.

Ford's Failure

The Ford Administration predicted that heating oil prices would go up by no more than the increase in the price of crude oil after they were decontrolled in May 1976.[3] That is, whatever happended to crude oil prices would happen to heating oil prices as well. Here there can be no question of external price shocks. The argument put forward at the time was that competition would prevent heating oil producers/ distributors from raising prices higher than the increase in crude oil costs. The Administration contended that distributors of heating oil would compete both with one another and with alternative fuels to preserve and expand their markets. Therefore, they would put pressure on producers to hold the price of heating oil down. In fact, the oil industry found some way to create price increases twice as large as the crude oil increases.[4]

Analyses of the increases in heating oil prices in excess of the increase in crude prices show that between one-fifth and three-quarters of the increment was due to something other than increases in production or operating costs.[5] In other words, there appeared to be increases in profit margins. Thus, competitive pressures had once again failed to keep prices down. On the contrary, decontrol in the absence of competitive pressures seems to have enabled producers and refiners to increase their profits.

Reagan's Failure

In January 1981, the Reagan Administration finalized the decontrol of gasoline with the assurance that gasoline prices would rise, at most, by five cents a gallon.[6] The administration contended that competition at the pump would keep prices down. However, within less than two months, the actual price increase was more than double that amount.[7] Nothing unusual was going on in the world oil market at that moment -- in fact, prices were declining slightly and there were no regulations to blame, since oil was now completely decontrolled. Yet, prices went up by more than 12 cents a gallon.

Here it is important to address a myth that has grown up around the Reagan gasoline decontrol action of January 1981. The supporters of decontrol are fond of pointing out that after gasoline prices peaked in March 1981, they declined by 2.2 percent through October. A great victory for decontrol is claimed. The claim does not stand even a modest degree of scrutiny.

First, between May 1979, the month before decontrol of crude oil began, and March 1981, when gasoline prices "peaked," prices had risen by 60 cents a gallon (from $.791/gallon to $1.388/gallon). It is hardly a major victory if prices then drop by 3.5 cents or about one twentieth of the increase of the previous two years. Market forces cannot be very strong if it takes a near doubling of prices to get them to move downward a fraction.

Second, the fall in prices observed in 1981 seems to have been totally unrelated to decontrol. The year before Reagan's decontrol action, gasoline prices fell by 2 percent from their peak in July 1980 to their floor in November 1980 (see Figure 2). In fact, prices had been quite stable throughout the latter part of 1980, prior to Reagan decontrol. The Reagan decontrol action seems to have enabled gasoline prices to jump 12 cents, then follow their usual pattern of seasonal moderation. A careful look at the history of gasoline prices shows that in 1975, 1976, 1977, 1980 and 1981 there was a decline in gasoline prices -- ranging from 1 to 3 percent -- between their peak in the summer and their valley in the following winter.[8] The pattern appears to be seasonal rather than being related to decontrol. Thus, the victory that is claimed for decontrol is an illusion.

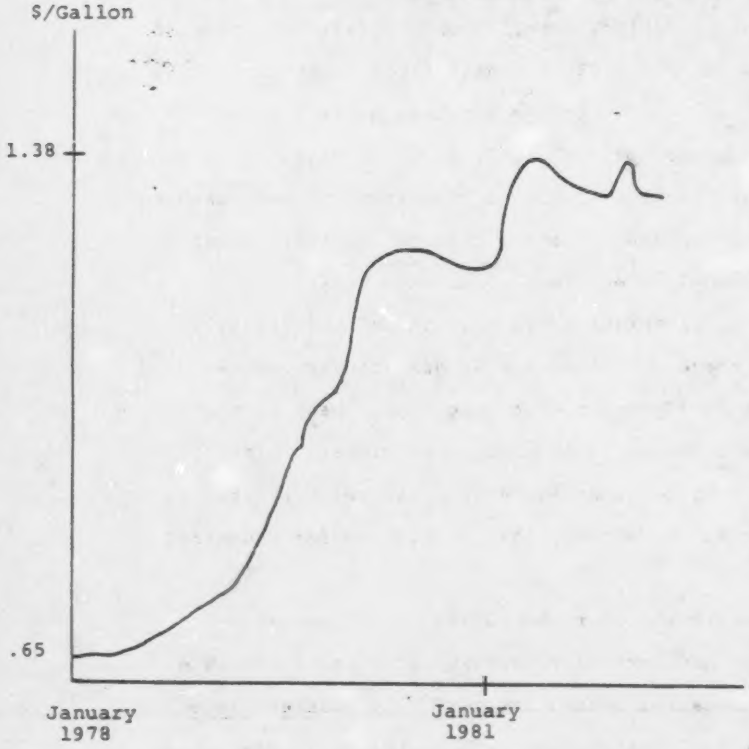
It appears that both Republican and Democratic administrations had seriously overestimated the strength of competitive and market forces and seriously underestimated the ability of the domestic energy industry to impose price increases in excess of what a competitive situation would have allowed.

Natural Gas Price Projections

Against this track record, the current flurry of predictions about natural gas decontrol is most interesting. Figure 3 presents a number of recent projections of the

FIGURE 2

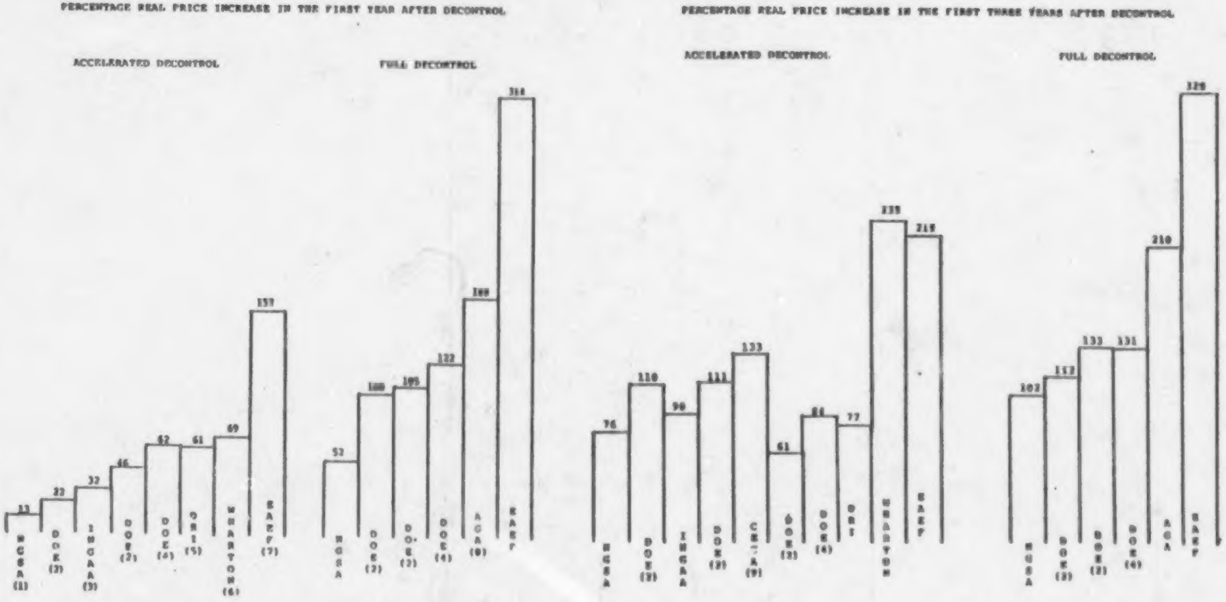
GASOLINE PRICES
1978-1981



SOURCE:
U.S. Department of Energy, Monthly Energy Review, various issues.

FIGURE 3

PRICE INCREASES PROJECTED AS A RESULT OF NATURAL GAS DECONTROL



SOURCES:
See following page

NOTES TO FIGURE 3

[1] Glenn C. Loury, An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices, (Natural Gas Supply Association [NGSA], April 1981). Full decontrol is Scenario 4. Accelerated decontrol is Senario 6. The latter is tantamount to a four year phase-in.

[2] U.S. Department of Energy, Two Market Analysis of Natural Gas Decontrol, Attachment 3, November 1981.

[3] Interstate Natural Gas Association of America, Analysis of Natural Gas Decontrol, December 1, 1981. Case J, which is the scenario preferred by INGAA (see Supplemental Statement on Behalf of the Interstate Natural Gas Association of America, Senate Committee on Energy and Natural Resources on the Implementation of Title I of the Natural Gas Policy Act, December 1, 1981).

[4] U.S. Department of Energy, Reducing U.S. Oil Vulnerability: Energy Policy for the 1980's (November 10, 1980), Chapter II.

[5] Mary H. Novak, "Natural Gas: Should tne NGPA Be Reopened," Data Resources Inc., Spring 1981, Decontrol-1982 Scenario.

[6] Wharton Econometric Forcasting Associates, cited in Dun's Business Month, November 1981, p. 56.

[7] Energy Action Educational Foundation, The Decontrol of Natural Gas Prices: A Price American's Can't Afford (February 19, 1981).

[8] The American Gas Association, Cost of Immediate Total Wellhead Price Decontrol of Natural Gas to Low Income and Disadvantaged Groups, April 9, 1981.

[9] See Appendix A.

increase in average wellhead prices in the first year and the first three years following both accelerated decontrol and full decontrol. The range of estimates is extremely wide. The highest estimate for the first year increase under an accelerated decontrol scenario is more than ten times as large as the lowest. For full decontrol, the highest estimate of the first year increase is six times as large as the lowest. Estimates of the three year increases do not vary as widely. The highest estimated increase for accelerated decontrol is 3.7 times that of the lowest, while under full decontrol the highest estimate is 3.6 times the lowest.

Full decontrol and the three year accelerated decontrol estimates are probably better gauges of the differences of opinion about likely price increases than the estimates after just one year of accelerated decontrol. This is the case because the various accelerated decontrol scenarios which CECA/RF has reviewed are based on somewhat different assumptions about which categories of gas will be decontrolled and what the pace of decontrol will be. However, the accelerated scenarios begin to converge in the third year in terms of the quantities of gas decontrolled and the ceiling prices allowed, so that these price estimates are based on roughly comparable conditions.

As Figure 3 shows, supporters of decontrol (for example, the Natural Gas Supply Association [NGSA] and the Reagan Administration) project price increases that are one-half to one-third those of opponents of decontrol (the American Gas Association [AGA] and Energy Action Educational Foundation [EAEF]). Here the experience of prior oil and oil product decontrol actions is most instructive. Actual price increases generally have been 2 to 2> times larger than the price increases predicted by the various supporters of decontrol. Thus, based on recent history and the pattern of projections, it is a safe bet to assume that actual price increases will fall midway between the high and low estimates.

Splitting the difference is not simply a numbers game. Differences in price projections need not stem from blatant biases or erroneous calculations. In fact, it is easy to construct technically correct explanations for each set of predictions, i.e., explanations whose reasoning is correct, once their assumptions are granted.

Those who project low price estimates tend to assume 1) intense competition between suppliers leading to relatively elastic supply and 2) significant discretionary use of energy or easy substitution of capital for energy or easy switching between fuels, leading to relatively elastic demand. In short, there is an assumption that competitive market forces on both the supply and demand sides would keep prices down.

Those who project high price estimates tend to assume 1) much less competition between suppliers and 2) much less elasticity of demand. Simply put, there is an assumption that competitive market forces are weak and prices could run up sharply after decontrol.

In Appendix A, CECA/RF develops a detailed example of the behavior of the natural gas market under assumptions of restricted competition and inelastic demand based on the most recent analysis of the natural gas market developed by the Department of Energy.[9] The CECA/RF analysis shows that altering DOE's assumptions about competition and demand elasticity can lead to a predicted price of gas 15 percent higher than DOE's estimates in Figure 3. That would put the estimate of price increases close to twice as high as NGSA's.

For present purposes, let it suffice to say that one approach to take in resolving a difference of opinion about the state of competition in the market would be to observe the market in order to ascertain which set of assumptions best fits reality. Economists are fond of identifying those characteristics of the market which theoretically determine the level of competition (e.g., concentration ratios) and then calculating them for each energy market. However, prior research in this regard has not been conclusive. Another, more direct and empirical approach is to look at the history of price behavior subsequent to recent decontrol decisions. Rather than rely on some theoretical notion of what the market should do, CECA/RF charts what it has actually done in the recent past. Past predictions, which assumed highly competitive conditions, have been off by a factor of two.

And they are likely to be off in the future -- also by a factor of two.

Price Increases and Economic Impacts

As mentioned in the introduction, the concern over the magnitude of price increases has two points of real significance. That is, there are two major reasons why we worry so much about price increases. One reason involves the equity of price increases. When prices go up -- especially on domestically produced commodities -- some Americans lose and some gain. The higher the increases, the bigger the losses. The second reason involves the impact of price increases on general economic activity. When prices go up, economic activity tends to be reduced. If price projections are off by a factor of two, the estimation of impacts will be off as well. Each of these issues will be dealt with in separate reports by CECA/RF.[10] However, in the context of the history of price projections and price realities one important observation can be offered at this point that deals with the linkage between price increases and economic impacts.

One of the arguments being made in support of accelerated decontrol of natural gas is that it will avoid a "price shock" and therefore moderate the economic impact of rising prices. The severe disruptions associated with the oil price shock of 1979-80 are frequently the point of reference. That is, those who support phased accelerated decontrol think they can avoid a price shock similar to that of 1979-80, which occurred for oil. If that is the frame of reference, then the argument that accelerated decontrol of natural gas will cushion the economic blow is largely unfounded.

The pattern of price increases that will occur under accelerated phased decontrol of natural gas is very similar to the pattern of price increases that actually occurred during 1979-81. Although the causes of the crude oil price increases in 1979-80 are different than the causes of the projected natural gas price increases, the actual patterns of increases and their likely economic effects are similar and this is a point of overwhelming importance. Let us review each pattern of price increases in turn.

The oil price shock is commonly associated with an event, the Iranian revolution, and a subsequent rapid increase in crude oil prices. From the point of view of the domestic economy, however, this conception is completely wrong. For six months after the Iranian shutdown of January 1979, 70 percent of all domestic crude oil was under price controls.[11] In June 1979, the phased decontrol of domestic oil began. The net effect was not that crude oil prices jumped instantaneously; rather, they rose in a rapid, but steady fashion. There was no single price shock; there was a phased run-up in prices.[12] Specifically, between January 1979 and October 1981, refiner acquisition costs for crude oil increased from about $2.26 per million Btu ($13.11/bbl) to $6.02 per million Btu ($34.93/bbl). The average monthly increase (compounded) was 3.3 percent. The actual month by month increases in prices were fairly even -- the average increase was 3.7 percent per month and 17 of the 29 monthly changes represented increases of between 2.1 percent and 7.2 percent. This is the price pattern that produced the negative economic impacts associated with the oil price shock.

Now let us contrast that historical record with the price trajectories projected for accelerated decontrol of natural gas. The price trajectory of natural gas decontrol will reflect two factors. Some gas will be decontrolled immediately (the most frequently discussed categories are all gas discovered after January 1, 1982 (referred to as "new-new gas") or all gas discovered after January 1, 1977 (referred to as "all new gas"). The remainder of the gas (referred to as "old gas") will be decontrolled in a phased fashion over a period of between 24 and 60 months, depending on which scenario is chosen and which categories are included.

According to the high and low estimates presented in Figure 3, the price trajectory that would result from decontrol is as follows: natural gas prices would go from about $2.30 per million Btus in January 1982 to a price between $7.00 and $8.50 per million Btus in January 1986. The average monthly price increases (compounded) would be between 2 and 3.3 percent. There would be a surge in the first year when monthly price increases would be between 3 and 4.2 percent (compounded). The highest price projection leads to a rate of increase in gas prices that is about 18 percent faster than that which occurred for oil. The low price projection leads to a rate of increase that is roughly 32 percent slower than the increase for oil. If reality falls between the two, one would expect a pattern of price increases that is quite close to that which occurred during the oil price shock. Such a pattern would mean that prices would increase at exactly the rate which occurred during the oil price shock.

To the extent that energy price increases present problems of structural adjustment in the economy (as opposed to simple surprises for which the economy is unprepared), not much relief can be expected from accelerated decontrol. Those structural problems and the magnitude of the impact of price increase will be the topic of another report in this series, but it is clear that the supporters of decontrol are mistaken if they believe that phased decontrol will cushion the blow.

Summary and Conclusions

In this report we have examined the history of price projections and the price realities that surround energy price decontrol decisions. We have found that, in the case of oil-related decontrol, the supporters grossly underestimated the increase in prices that occurred. Insofar as they repeatedly argued that competition would hold prices down, their dismal record of price projections suggests that competitive and market forces are weak.

Turning to the current projections of the impact of natural gas decontrol, we find a wide difference of opinion. The supporters of decontrol predict price increases one-third that of the opponents. If history is a guide, one can expect that the actual price increases will be twice as large as those predicted by the supporters.

Finally, we have examined the pattern of price increases that occurred during the "oil price shock" of 1979-80. We find the accelerated phased decontrol of natural gas will create a trajectory of price increases that is quite similar to that which occurred during the oil price shock. This clearly suggests that phasing-in decontrol will not avoid the severe negative economic impacts of rising energy prices that occurred during the oil price shock.

FOOTNOTES

[1] Official accounts absolve the major oil companies of all responsibility (see, for example, *The Report of the Department of Justice to the President Covering the Gas Shortage of 1979* [Washington, DC: Goverment Printing Office, July 1980]) but there is ample evidence of their involvement (see *Roots, Realities, Responsibilities: How the Major Oil Companies, Not OPEC, Tightened Oil Supplies and Initiated Price Hikes in 1978 and 1979* [Energy Action Educational Foundation, May 1980]).

[2] See, for example, "Testimony of Charles L. Shultze, Chairman, Council of Economic Advisors," before the *Joint Economic Committee, Subcommittee on Energy*, U.S. Congress, April 25, 1979.

[3] See, for example, testimony of Gorman Smith, before the U.S. Congress, Committee on Interstate and Foreign Commerce, H.R. Doc. No. 914-131 (June 22, 29, 1976), p. 38.

[4] U.S. Department of Energy (DOE), *Monthly Energy Review*, various issues.

[5] The lower estimate can be derived from DOE, *Analysis of Refiner No. 2 Distillate Costs and Revenues, July 1976-June 1979*, Tables 9 and 19 (September 1979). The higher estimate can be derived from the Consumer Energy Council of America, "Analysis of No. 2 Distillate Prices and Margins," presented before the U. S. Congress, House, Subcommittee on Environment, Energy and Natural Resources of the Government Operations Committee, February 12, 1980.

[6] See the comments of David Stockman, in "Decontrol of Oil Prices Expected Today," *Wall Street Journal*, January 28, 1981. Some industry analysts asserted that "we would be hesitant to sock on a 10-cent-a-gallon increase at once, the increase could come in stages at a rate a couple of cents a month." Others professed to believe that "almost nothing" would happen due to ample stocks which would face refiners' margins to shrink.

[7] *MER*, various issues.

[8] Ibid., various issues.

[9] U.S. Department of Energy, *Two-Market Analysis of Natural Gas Decontrol* (Washington, DC: Government Printing Office, November 1981).

[10] CECA/RF, "Natural Gas Price Deregulation: A Case of Trickle Up Economics" (January 20, 1982).

[11] The Congressional Budget Office, *The Decontrol of Domestic Oil Prices: An Overview*, May 1979, Chapter II.

[12] *MER*, various issues.

Appendix A

COMPETITIVE VERSUS OLIGOPOLY PRICING OF NATURAL GAS

or

How Big Does the Tail Have To Be To Wag the Dog?

an appendix to

The Past as Prologue I

The Underestimation of Price Increases in the Decontrol Debate

Prepared by:

CONSUMER ENERGY COUNCIL OF AMERICA

RESEARCH FOUNDATION

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APPENDIX A

COMPETITIVE VERSUS OLIGOPOLY PRICING OF NATURAL GAS

or

How Big Does the Tail Have To Be
To Wag the Dog?

A. Introduction

The review of the recent history of the behavior of energy prices presented above has shown that history has been extremely unkind to those who assume that energy markets are highly competitive. Actual price increases have far outstripped their predictions, calling into question the soundness of the competition assumption. The review of natural gas decontrol price projections presented in "Past as Prologue I" has shown wide differences and we have suggested that these differences in price projections can be explained logically by differences in assumptions with respect to the extent of competition in the market. In this Appendix, we demonstrate that differences in assumptions can be translated empirically into differences in price projections.

Unfortunately, few of those who actually make the projections bother to present and defend their assumptions or to analyze what the impact of alternative assumptions would be. Above all, because price predictions tend to be highly political, most of those who make them are not at all inclined even to consider alternative assumptions that touch on matters as basic as competition. Moreover, most studies do not contain an adequate basis for undertaking such analyses. Thus, most studies simply state their assumptions and derive their conclusions without gathering evidence or demonstrating that supply and demand (either competitively or non-competitively) will reach equilibrium at the particular price they believe is correct.

The recent study by the Department of Energy[1] does have the necessary elements for considering alternative assumptions about competition, although DOE did not conduct such an analysis. In fact, DOE assumes a level of competition that is identical to the assumptions made by the gas producing industry and never questions these assumptions. Because the DOE study is likely to be of considerable importance in present and future decontrol debates, because it is one of the few with the necessary analytic elements, because DOE has blindly assumed competition, because recent price history has suggested an absence of competition, and because we believe that there is a considerable body of evidence to justify some skepticism of the assumption of a high degree of competition in the natural gas market,[2] this technical appendix compares the expected price under the assumptions of competition to the expected price under the asssumption of non-competition in the market.

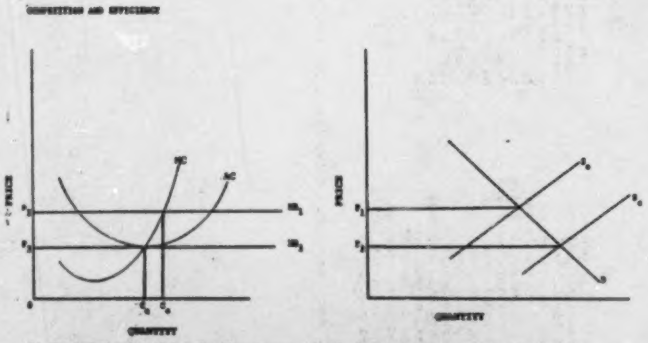
B. Competition vs. Non Competition

The basic tools needed to analyze pricing behavior under assumptions of a lack of competition can be found in the most elementary of economics texts. Figures A.1 and A.2 provide two simple discussions of why monopoly or oligopoly market conditions lead to lower quantities supplied and higher prices than competitive conditions. For those unfamiliar with the basic concepts, a careful reading of the explanations accompanying the figures will be helpful.

The essence of the argument rests on the demand curve which individual suppliers face. In a competitive situation, each supplier faces perfectly elastic demand and marginal revenue curves, since if the supplier raises prices above the market price, the supplier would lose his/her business to his/her competitors. Monopolists or oligopolists do not face perfectly inelastic demand curves. As they raise their prices, they lose only part of their business; since fewer competitors threaten their demand, their loss of demand is relatively small. They are willing to lose demand, as long as they increase profits by doing so. That is, they keep raising prices, even though they are losing business, because they make more profits by selling less at higher prices. In fact, all suppliers maximize profits at the point where marginal revenue equals marginal cost; but oligopolists maximize profits at higher prices and lower quantities supplied than those who face competition because they face a less than perfectly elastic (i.e., downwardly sloping) demand

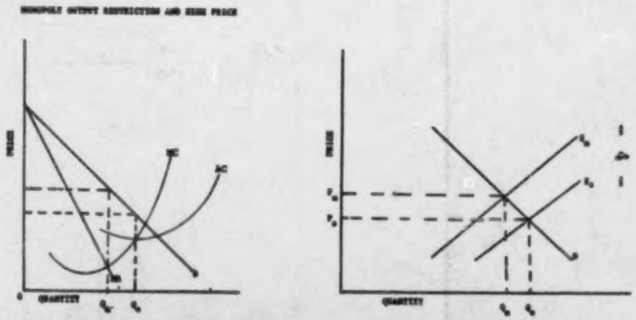
FIGURE A.1

PRICE AND SUPPLY UNDER ASSUMPTIONS OF COMETITION AND MONOPOLY



At the market price of P_1, the firm chooses a level of output, C_1, where MR = MC. Since P is above AC, profits are earned. Entry occurs, pushing the market supply curve out to the right, and market price decreases. When market price falls to P_2, entry will cease. For the firm, MR = MC at C_2 (so profits are "maximized," the firm does the best it can given the circumstances); and there are no profits, since AC=P! The cost per unit produced is equal to the price the firm gets per unit sold. Revenues just cover costs. However, remember that costs include opportunity costs for the firm! Even though no economic profits are earned at this level of output, the firm still gets enough revenue to cover its opportunity costs (normal profits). So the firm will remain in business. But note what has happened. Due to competition and free entry, the firm has been forced to produce at that level of output that minimizes average cost!

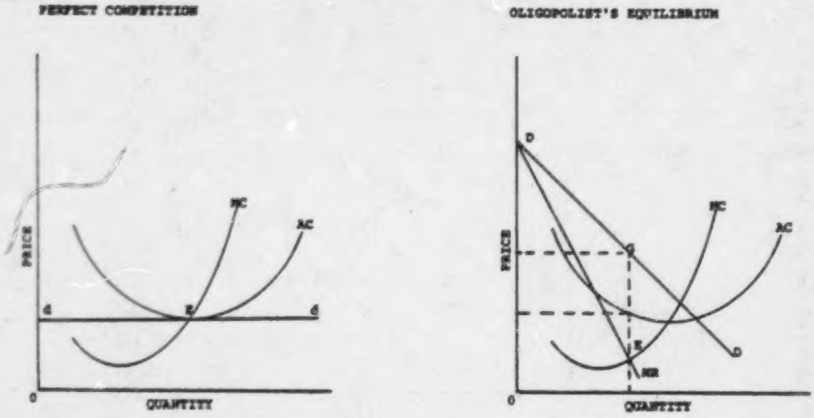
Source: Tom Riddell, Steve Stamos and Jean Shackleford, *Economics: A Tool for Understanding Society* (Reading Mass.: Addison Wesley, 1979) pp. 167, 173-176.



What level of output will the monopoly choose to produce? It will produce Q_m, where MC = MR, because that level of output maximizes its profits. It will charge a price of P_m for that amount of output, because that is the price the market is willing to pay for that quantity. The monopoly is earning profits since P is well above AC. And the monopoly is producing at a rate of output that does not minimize average costs (Q_c is where AC is at a minimum). However, in a monopoly, when profits are being earned, there is no entry into the market, because there are no competitors. We can examine the theoretical results of this by focusing on the (aggregate market). If there were competition in the market, new firms would enter, market supply would increase to S_c, and market price would decrease to P_c. Thus, monopoly restricts output, since $Q_m < Q_c$. And monopoly charges higher prices, since $P_m > P_c$. Finally, monopolies earn monopoly profits. An important conclusion that can be drawn from the monopoly model is that the existence of market power (ability to control supply and price) tends to prevent the occurrence of consumer sovereignty, the attainment of economic efficiency, and the operation of the invisible hand. The monopoly benefits at the expense of the society.

FIGURE A.2

PRICE UNDER ASSUMPTIONS OF COMPETITIVE AND OLIGOPOLY BEHAVIOR



SAMUELSON OFFERS THE FOLLOWING DISCUSSION OF THE TWO SITUATIONS:[a]

> This typical perfect competitor is one of so many producers of an identical good that he/she faces a practically horizontal (infinitely elastic) demand (dd) curve, even though the industry's very much larger DD curve can be much more inelastic. If there is free entry and exit of well-informed firms who can replicate the cost conditions of any other firm, long-run equilibrium at E will involve no excess of profit over competitive costs (including properly computed implicit opportunity cost returns). Society is getting its total output most efficiently, in recognition of the P=MC condition, both in long and short runs. It is not forcing out of existing firms any output that could be obtained more cheaply by adding new firms.

> After experience with disastrous price wars, each of the few rivals that dominate a given market is almost sure to recognize that price cutting begets cancelling-out price cutting. So the typical oligopolist will estimate his/her demand curve DD by assuming others will be charging similar prices (and by taking into account the potential entry of other oligopolists). Since he/she gains little from extreme cutting of P, he/she will settle for sizable markup of P over MC.

[a] Paul Samuelson, Economics (New York: McGraw Hill, 1980), pp. 482, 485.

curve. This basic concept underlies all discussions of pricing under non-competitive conditions.

Thus, in order to estimate natural gas prices under either competitive or non-competitive assumptions, we must estimate the supply, marginal cost, demand, and marginal revenue curves.

C. The DOE Assumptions

1. The Basic Approach

The Department of Energy and the gas producing industry assume a partially competitive market. They assume that a price ceiling on natural gas is set by some alternative fuel. That is, they assume there exists a price above which suppliers of alternative forms of energy (e.g., oil) will be able to steal business from gas producers. Therefore, competition between fuels restrains the price increases of natural gas and sets the market clearing price.

If we assume a ceiling price on gas which is set by competition with oil we can establish a demand curve for gas. When the demand curve is coupled with a supply curve, we can analyze what the market price of gas would be under different assumptions about the pricing behavior of suppliers.

However, it should be noted that the market assumed by DOE is not a perfectly competitive market in the classic sense. DOE does not assume that suppliers of gas can exert significant downward pressure on the price of alternative fuels. That is, gas producers do not steal sufficient oil business by producing more gas at lower prices to force the oil suppliers to lower their prices. The fact that gas suppliers do not try to exert downward pressure on oil prices suggests that perfect competition is not present. This creates the possibility of extremely high profits on natural gas production because natural gas prices need not bear any relationship to the costs of producing natural gas. That is, entry into the energy industry does not occur to wipe out abnormal profits (see Figure A.1 above). Instead of the average price of all forms of energy being driven down to a point where only normal profits exist, DOE assumes that the price of gas rises and yields abnormal profits. In fact, as will be discussed below, DOE's analysis suggests that extremely high rates of profit exist on gas production. These rates of profit would not exist in a perfectly competitive world.

2. The Theoretical Market Clearing Price

The Department of Energy and the gas production industry both assume a partially competitive environment in which the price of gas at the wellhead is set by the cheapest competing fuel. The cheapest competing fuel is assumed to be high sulfur (#6) residual fuel oil used primarily in industrial boilers (including electric utility power plants). Consumers of #6 oil are assumed to set the marginal price both because that fuel is cheapest and because these industrial consumers tend to have the capacity to shift between fuels in the short term. At a minimum, they have adequate incentive to acquire that capacity, thereby threatening to switch fuels if the given price is not competitive. That is, they can or are willing to acquire the ability to burn either fuel at any moment. Therefore, they "play" the energy market to minimize costs.

They install dual fuel-burning capacity partly because they have been low priority "interruptible" users in the past (and have needed dual capacity in order to maintain production operations) and partly because they consume enough energy to make playing the energy market economically justifiable. That is, the volumes of energy they consume are so large that they can cover the costs (including normal profits) of installing dual fuel-burning equipment.

DOE assumes that the wellhead price of natural gas will be equal to the burner tip price of #6 fuel oil minus gas transmission and distribution costs. That is, the price of gas at the wellhead can be no higher than the price of the alternative at the burner tip net of the transmission and distribution costs, i.e., the costs of getting the gas from the wellhead to the burner tip. Recent estimates by DOE show that consumers of high sulfur #6 oil who are potential gas consumers account for less than 4 percent of the aggregate demand for gas (Residual D in Table A.1). However, because they are the marginal users in a competitive framework, they set the wellhead price.

Table A.1

PERCENTAGE DISTRUBTION OF NATURAL GAS DEMAND

Category and Alternative Fuel Type

Alternative Fuel	Residential		Commercial		Industrial Non-Boiler		Electric Utilities		Industrial Boiler		TOTAL[1]
	Inter-state	Intra-state	Inter-state	Intra-state	Inter-state	Intra-state	Inter-state	Intra-state	Inter-state	Intra-state	
Distillate	25.9	3.4	7.3	1.4	3.3	1.5	2.4	.8	.2	1.3	46.5
Residual A	0	0	3.3	.7	10.1	4.9	.7	.2	1.4	2.0	23.3
Residual B	0	0	3.3	.7	1.5	2.6	.9	8.4	.6	1.2	19.2
Residual C	0	0	0	0	1.0	.7	1.3	.2	1.0	1.4	5.6
Residual D	0	0	0	0	.3	.1	.6	.1	1.1	1.4	3.6
Residential ($2.00)	0	0	0	0	.3	.2	.6	.1	.4	.6	2.2

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[1] Numbers may not add due to rounding.

Source: DOE, Two Market Analysis, p. A-88.

According to DOE, once the wellhead price is set at the margin by these consumers, then the burner tip price can be calculated for all other consumers. This is accomplished by taking the wellhead price and adding to it the transmission and distribution costs that apply to each user. In other words, the entire market is driven by competition at the margin for high sulfur fuel oil users.

If one questions the assumption that suppliers behave as though they were driven by competition to sell every cubic foot of gas that they can, then one must question whether high sulfur residual fuel oil should drive the wellhead price. Such a small percentage of demand may look like a very small tail to be wagging a big dog. Wouldn't producers be willing to lose 4 percent of their demand by raising their price, if the increased price would lead to an increase in total profits?

As we shall see, DOE's evidence suggests that, if producers behave in a non-competitive fashion, they can maximize profits by raising prices well above DOE's theoretical competitive market clearing price and sacrificing as much as 30 percent of the total demand.

The following analysis estimates the demand, marginal revenue and marginal cost curves projected for 1985 based on DOE's recent analysis of accelerated/phased decontrol. Because the data are taken directly from published DOE materials, the analysis embodies DOE's assumptions and relies on considerable interpolation of DOE's results. Nevertheless, it makes the point quite clearly.

D. An Estimation of the Theoretical Market Clearing Price under Competition

1. The Demand Curve

In order to create the demand curve for natural gas, we begin by identifying the quantity of gas demanded by a series of specific categories of users (see Table A.1 above). User categories are identified by (1) the end use to which the fuel is put (residential, commercial, industrial non-boiler, industrial boiler and electric utility), (2) the pipeline market (interstate versus intrastate) and (3) the alternative fuel (distillate, 4 grades of residual oil and the lowest grade [highest sulfur] residual minus $2.00). There are 44 combinations of end uses/pipeline markets/ alternative fuels and these are used as data points for the estimation of the demand curve. End use type, pipeline market and alternative fuel are chosen to define the categories of users because they are the most critical determinants of the wellhead price of natural gas that would compete with alternatives at the burner tip.

In the next step, we calculate the wellhead natural gas price that would just capture the business of each user category. That is, we create a second matrix by calculating the burner tip price of the alternative fuel minus the transmission and distribution costs implicit in DOE's analysis for each specific user category (see Table A.2).

Table A.2

The Competitive Wellhead Price of Natural Gas for Each User Category/Alternative Fuel Combination

Alternative Fuel	Transmission & Distribution Costs	Residential		Commercial		Industrial Non-Boiler		Electric Utilities		Industrial Boilers	
		Inter-State	Intra-State	Inter-State	Intra-State	Inter-State	Intra-State	Inter-State	Intra-State	Inter-State	Intra-State
Distillate	7.13	5.08	5.79	5.36	6.10	6.00	6.69	5.95	6.77	6.16	6.16
Residual A	6.17	na	na	4.40	6.14	5.04	5.73	4.99	5.81	5.20	5.20
Residual B	5.71	na	na	3.94	4.68	4.58	5.27	4.53	5.35	4.74	4.74
Residual C	5.55	na	na	na	na	4.42	5.11	4.37	5.19	4.58	4.58
Residual D	5.36	na	na	na	na	4.23	4.92	4.18	5.00	4.39	4.39
Residual D minus $2.00	3.36	na	na	na	na	2.25	2.92	2.18	2.00	2.39	2.39

Source: DOE, Two Market Analysis, Attachment IV.

The burner tip price of the alternative fuel minus transmission and distribution costs equals the wellhead price that would be just competitive with the alternative.

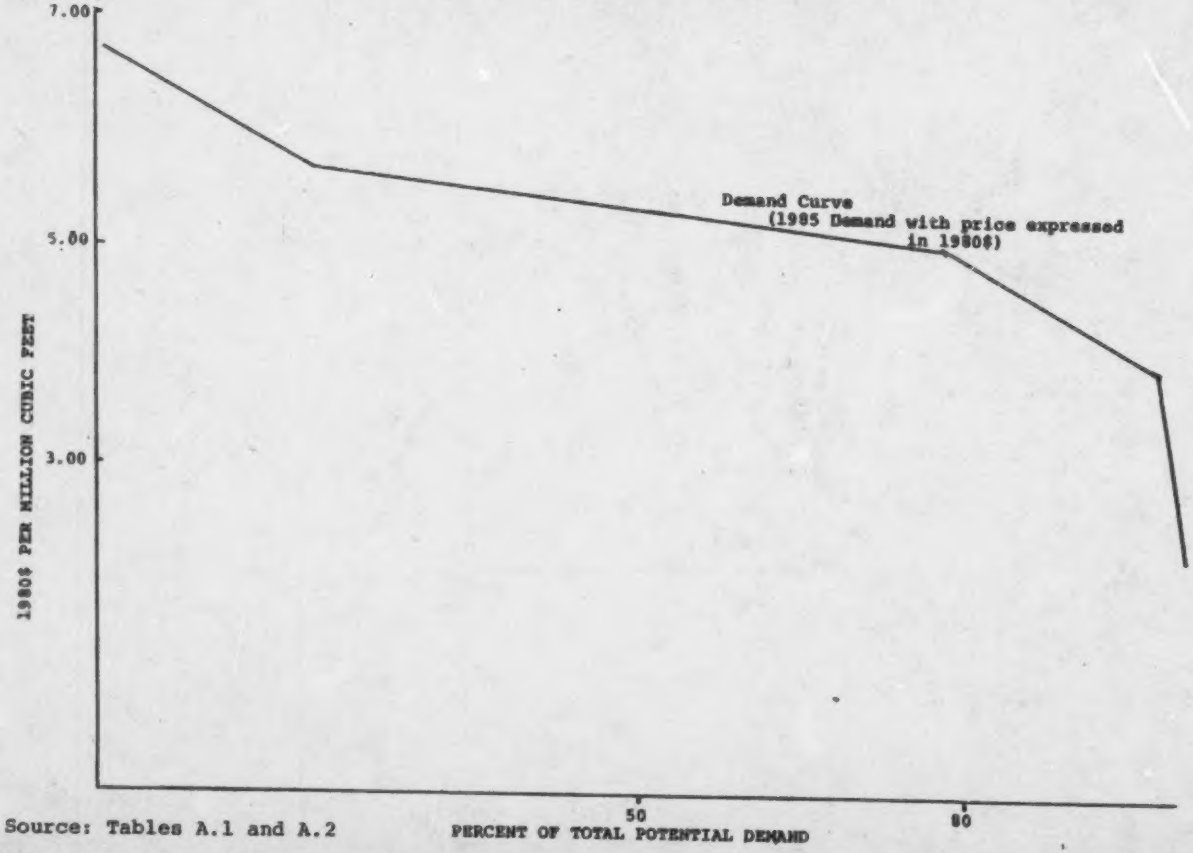
The demand curve that results (see Figure A.3) exhibits a shape that is quite familiar. In fact, it is not unlike the demand curve depicted by DOE in its conceptual discussions of the natural gas market (see Figure A.4). However, the point at which demand becomes inelastic for the second time, the point at which the curve turns down for the second time, occurs at a higher price than in DOE's conceptual curve. The difference in shape is significant for two reasons which will be elaborated below. First, it makes the benefits of oligopoly pricing secure. That is, the benefits are impervious to (or "robust" with respect to) the assumptions made about the shape of the marginal cost curve. Second, it also has major implications for the behavior of the market, even if competition is assumed. The steepness of the demand curve at prices below $5.00 means that the market will not be very responsive to price changes.

2. The Supply Curve

The second curve necessary to calculate the market equilibrium and/or the point of maximum profit for oligopolists is the marginal cost (supply) curve (see Figure A.5). DOE gives 1980 marginal costs in 1980 $/mcf for four categories of domestically produced gas -- associated ("no

FIGURE A.3

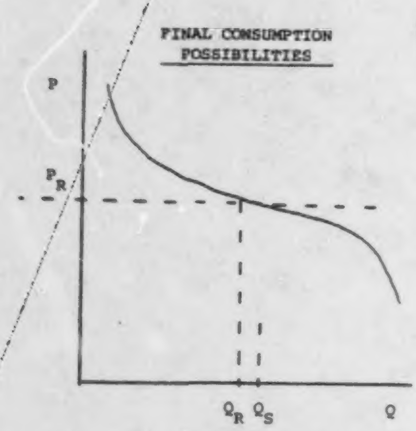
MAXIMUM POTENTIAL NATURAL GAS DEMAND CURVE



Source: Tables A.1 and A.2

FIGURE A.4

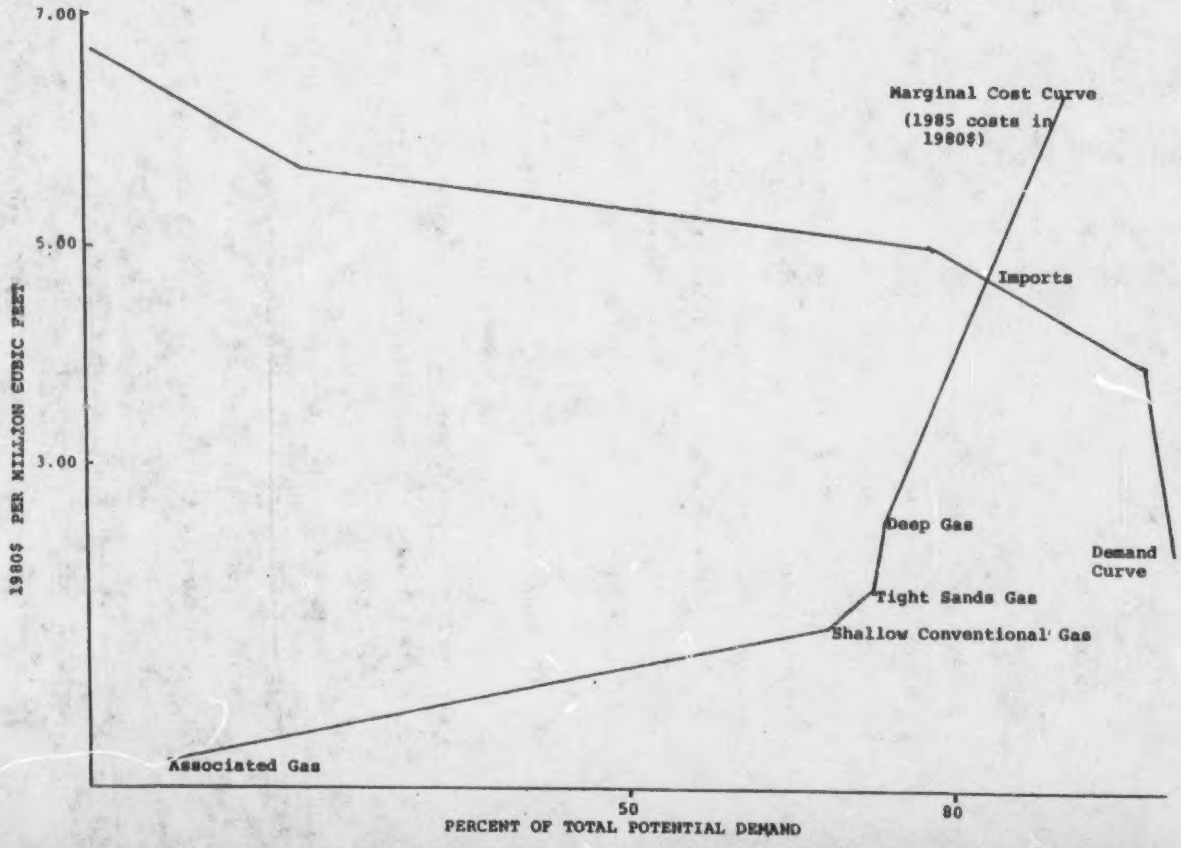
THE DEPARTMENT OF ENERGY'S CONCEPTUAL DEMAND CURVE



Source: DOE, Two Market Analysis, p. A-97

FIGURE A.5

MARGINAL COST CURVE FOR NATURAL GAS



Source: See text

cost"), shallow conventional ($1.24), tight gas ($1.50) and deep gas ($2.15).

Since all prices used to plot the demand curve are 1985 prices stated in 1980 $/mcf, the costs are stated on the same basis for both demand and supply. However, the supply costs are estimated for 1980, not 1985. Therefore, it is necessary to calculate marginal costs for 1985.

Marginal costs will rise over time and DOE assumes they will rise as a function of the declining success rate of natural gas exploration. If success rates change differently for each category of gas exploration, then the shape of the marginal cost curve could change. However, for the base case, DOE assumed a real 2.5 percent increase in marginal costs per year. This leaves the shape of the curve largely unaffected. For the purposes of moving five years into the future, this would appear to be a reasonable assumption. The marginal cost curve shown in Figure A.5 includes this 2.5 percent per year real price increase for the five years between 1980 and 1985.

Here it should be noted that DOE's initial marginal costs for 1980 include an 8 percent real rate of return (normal profits). However, if we compare the initial marginal cost to the actual prices being allowed or paid in the market in 1980, we discover that the rate of return is much higher than 8 percent (see Table A.3). The initial marginal cost estimates imply actual costs (costs before profits are added) of $1.14/mcf for conventional shallow gas,

Table A.3

ESTIMATING IMPLICIT RATES OF RETURN FOR VARIOUS CATEGORIES OF NATURAL GAS

	(1) Initial Marginal (1980$ mcf)	(2) Profit (8% real)	(3) Cost [(3)=(1)-(2)]	(4) Ceiling[d] Price (1980$ mcf)	(5) Production[d] Taxes (7%)	(6) Additional[d] Costs	(7) Net Producer Revenues [(7)=(4)-(5)-(6)]	(8) Implicit Rule of [(8)=(7)-(3)/(3)]
Shallow Conventional[a]	1.24	.10	1.14	2.47	.16	.03	2.28	100
Tight Sands[b]	1.50	.11	1.39	4.92	.32	.03	4.57	229
Deep Gas[c]	2.15	.16	1.99	6.80	.48	.03	6.29	

Source: DOE, Two Market Analysis, as follows:

[a] Weighted average of regional marginal costs in Figure III-6, p. A-20.

[b] P. A-54.

[c] P. A-53.

[d] Attachment 2, p. 2-2.

$1.39/mcf for tight sands gas and $1.99/mcf for deep gas. The ceiling prices allowed for these types of gas imply revenues to producers (i.e., the market price of gas net of severance and other production taxes as well as cost add-ons) of $2.28/mcf for shallow gas, $4.57/mcf for tight sands gas and $6.29/mcf for deep gas (assuming deep gas can get the interstate marginal price that DOE assumes for 1981). The implicit rates of return (before income taxes) are 100 percent for shallow gas, 229 percent for tight gas and 216 percent for deep gas.

These extremely high rates of return are the result of the absence of pressure to drive prices below the effective ceilings which oil prices (and NGPA) allow. As discussed above, the fundamental market process which should drive prices down in a competitive economy -- the free entry of firms willing and able to produce gas at the average rate of return in the economy, thereby lowering the price and the rate of profit -- is obviously not working.

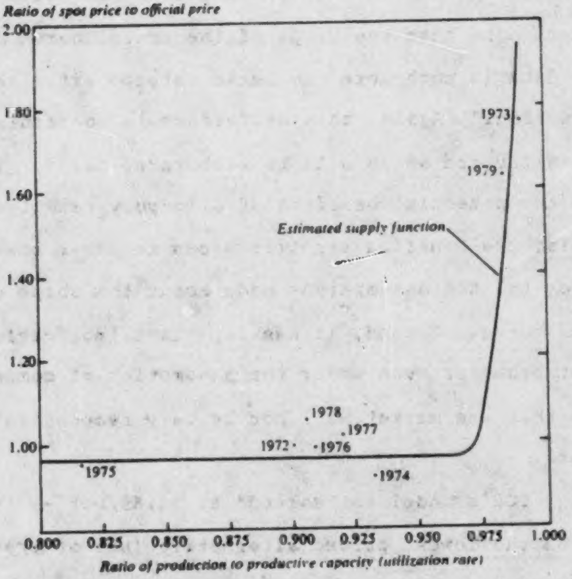
In fact, in DOE's model, domestic production never is able to meet domestic demand and, therefore, imports enter the market. However, those who export gas to the United States behave at least as silent partners in the oligopoly and do not try to steal more business by moving their prices down to undercut the abnormal profits of American producers. Indeed, they set their price at the theoretical marginal price -- the alternative fuel price. In DOE's analysis, this is $4.69/mcf (1980 $).

The marginal costs cited above generate a curve with a very shallow slope until conventional production is exhausted (on an annual basis) and a very steep slope thereafter. Interestingly, economist William Nordhaus has recently drawn a supply curve for the oil market with a similar shape (see Figure A.6). This curve is not unlike the curve DOE uses in its conceptual discussion (see Figure A.7). However, note that the slope of the actual curve derived from DOE's data is much more inelastic (steep) after the point of "inflection." Again, this difference in shape has two points of significance which will be elaborated below. First, it makes the potential benefits of oligopoly relatively secure. That is, the benefits are impervious to (or robust with respect to) the assumptions made about the shape of the demand curve. Second, it has important implications for market behavior even under the assumption of competition. It means that the market will not be very responsive to price changes.

DOE's model is "solved" at $4.69/mcf -- the equivalent of the lowest priced alternative (net of transmission and distribution costs). The market settles at a point at which about 16 percent of the maximum potential demand is not captured by gas producers. That is, 16 percent of the potential demand is allowed to slip away to alternative fuels.

FIGURE A.6

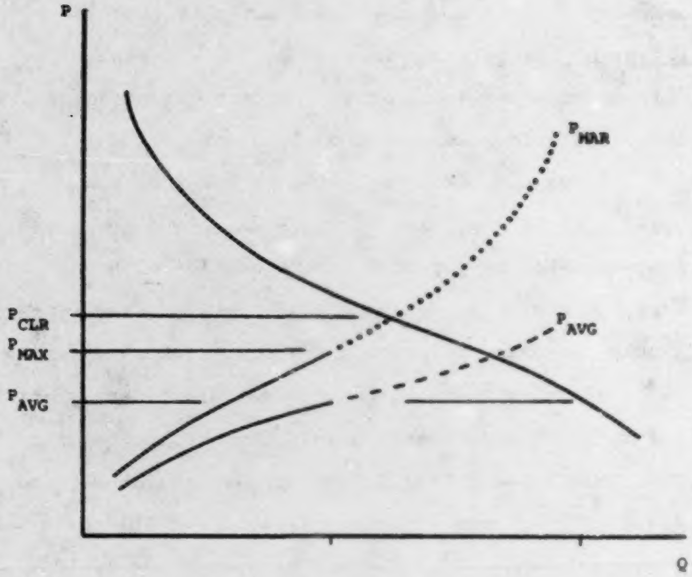
AN ESTIMATED SUPPLY FUNCTION FOR
CRUDE OIL



Source: William Nordhaus, "Oil and Economic Performance in Industrial Countries," Brookings Papers on Economic Activity, 2, 1980, p. 369.

FIGURE A.7

THE DEPARTMENT OF ENERGY'S CONCEPTUAL SUPPLY CURVE



Source: DOE, Two Market Analysis, p. A.99

3. The Market at Equilibrium

As noted above, the shapes of the supply and demand curves have important implications for the behavior of the natural gas market, even under assumptions of competition. Because the curves are so steep, i.e., inelastic, the market will not be very responsive to price changes. Neither demand nor supply will be changed much, even in the face of relatively large price increases. This insensitivity to price changes, even under the assumptions of competition, deserves further empirical analysis.

Even in DOE's analysis, in the long run, the supply elasticity is very small. Every decontrol scenario leads to a lower total supply than a continuation of NGPA. Furthermore, in the short run, DOE's analysis shows very small supply responses to price increases. Table A.4 shows the calculation of the aggregate market elasticity that DOE projects for accelerated phased decontrol, when compared to a continuation of NGPA. It can be seen that the price elasticity of supply is less than .07 in all years and the average is only .04. That is extremely small. DOE's data is intended to test comparisons between scenarios within years (e.g., NGPA compared to accelerated decontrol in 1983). However, the conclusion about supply elasticity stands up when the data is looked at in another way. For example, note that the supply elasticity between the year before decontrol and the year after decontrol under NGPA (compare 1984 to 1985) is only .039 percent.

Table A.4

IMPLICIT SUPPLY ELASTICITIES IN THE AGGREGATE NATURAL GAS MARKET

	NGPA Base Case			Accelerated/Phased Decontrol (All New Scenario)			
	(1) Wellhead Price (1980$/mcf)	(2) Domestic Demand (BCF)	(3) Wellhead Price (1980$/mcf)	(4) Domestic Demand (BCF)	(5) % Price Difference (5)=[(3)-(1)]/(1)	(6) % Demand Difference (6)=[(2)-(4)]/(4)	(7) Implicit Elasticity (7)=(6)/(5)
1982	2.27	17737.6	3.05	18033.9	34.3	.5	.015
1983	2.42	17155.0	3.81	17605.0	57.4	2.6	.045
1984	2.61	16671.7	4.42	17440.5	69.4	4.6	.066
1985	4.45	17131.6	4.69	17088.7	-		

Source: DOE, Two Market Analysis, Attachment IV.

Calculation of the demand elasticity is more complex since there is a great deal of fuel switching that goes on in the gas market. Industrial users of oil switch to gas as do some residential consumers. Table A.5 presents a calculation of the implicit demand elasticities in the aggregate gas market that DOE projects for accelerated decontrol. In order to take account of fuel switching, the demand utilized as the basis for the calculations is the maximum potential gas demand, i.e., the total energy consumed by all potential gas users. Since the oil price is identical for all scenarios, any change in demand must be due to changes in the natural gas price and changes in the mix of oil and gas used by the aggregate of consumers. That is, if some oil consumers switch to gas, they may pay a price that is lower than they would have paid for oil. Their effective price is lower and their demand will be higher. The aggregate price paid by all consumers would also be lower. To compensate for this shift in the mix of fuels, we have calculated an "effective" average energy price for all potential gas consumers under NGPA and used it as the basis for calculating demand elasticities.

It will be noted that demand elasticities are somewhat higher than the supply elasticities, ranging from .088 to .184 and averaging about .14. The implicit elasticity for the year in which decontrol begins under NGPA is .18. These elasticities are consistent with other estimates.[3] They are also quite low compared to other commodities.

Table A.5

IMPLICIT DEMAND ELASTICITIES IN THE AGGREGATE NATURAL GAS MARKET

	NGPA Base Case			Accelerated/Phased Decontrol (All New Scenario)		Estimating the Elasticity		
	(1) Wellhead Price (1980$/mcf)	(2) Effective Wellhead Price	(3) Domestic Demand (BCF)	(4) Wellhead Price (1980$/mcf)	(5) Domestic Demand (BCF)	(6) % Price Difference (6)=(4)-(2)/(2)x100]	(7) % Demand Difference [(7)=(3)-(5)/(2)x100]	(8) Implicit Elasticity (8=7/6)
1982	2.27	2.44	22908.7	3.05	22495.1	25.0	-2.2	-.088
1983	2.42	2.54	22659.1	3.81	20754.1	50.0	-9.2	-.184
1984	2.61	2.72	2268.6	4.42	20461.6	62.5	-9.3	-.149
1985	4.45	4.02	20438.0	4.69	—	-	-	-

Source: DOE, Two Market Analysis, Attachment IV.

Thus, the shapes of the supply and demand curves do not resemble the classical, moderately elastic straight lines typically used to depict "competitive" situations. Any theoretical conclusions drawn about typical competitive situations on the basis of those typical curves should not be extrapolated to the natural gas market. Above all, one must not assume a great deal of price sensitivity even where competition is assumed. The implications of these steeply sloping supply and demand curves (when compared to the classical curves of competitive supply and demand), which are explored in other reports in this series, are:

1. Total supply under decontrol is not greater than under a continuation of NGPA, even though prices are higher, because supply responses are small.
2. The equity loses that one might predict for decontrol are larger than expected because demand responses are small and consumers bear more of the burden than expected.
3. The efficiency gains that one might predict for decontrol are smaller than expected because supply and demand responses are smaller than expected.

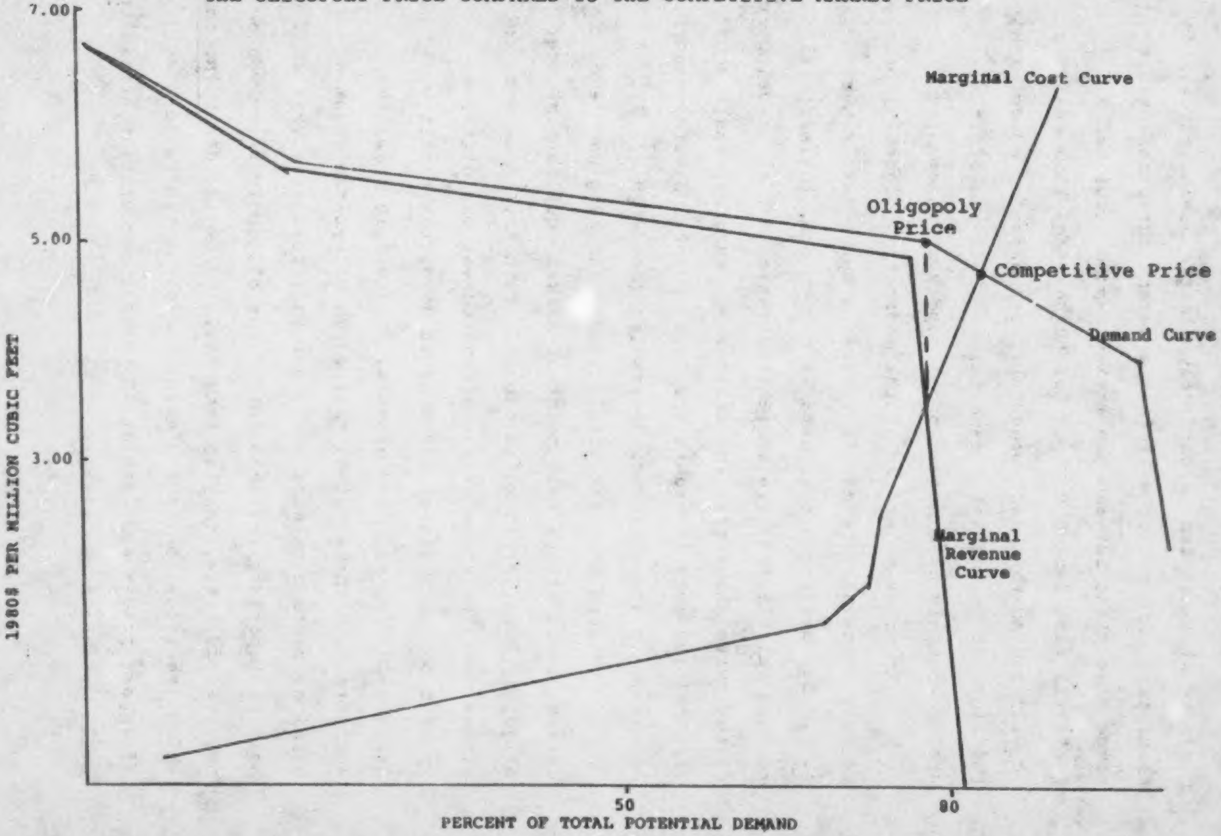
Having examined the implications of the shape of the supply and demand curves for the analysis when competitive behavior is assumed, we turn next to the analysis of situations in which non-competitive behaviors are assumed.

E. The Oligopoly Solution

If producers behave rationally, they will examine their marginal cost and marginal revenue curves in order to choose the price/quantity combination which will maximize profits. If they are oligopolists or monopolists, each

FIGURE A.8

THE OLIGOPOLY PRICE COMPARED TO THE COMPETITIVE MARKET PRICE



Source: Table A.1 and A.2.

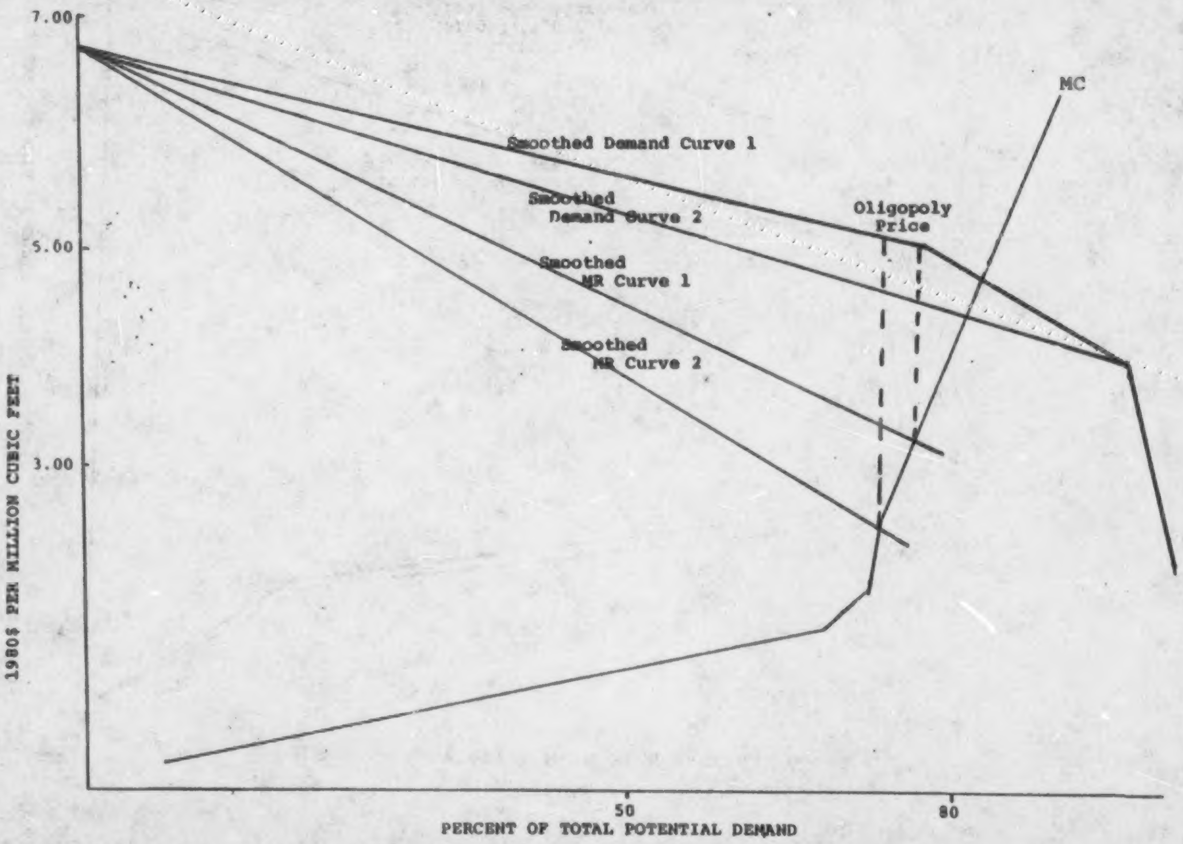
producer will not face a perfectly elastic demand curve. In fact, each oligopolist will face a demand curve that has a slope some place between the market demand curve and a perfectly flat demand curve. For purposes of this analysis, we will assume that each producer faces a demand curve with the slope of the market demand curve. This would fit a strict monopoly or a number of oligopoly arrangements.

In order to arrive at the monopoly (oligopoly) price, we must calculate the marginal revenue curve (see Figure A.8). Because the actual data is not smooth, the marginal revenue calculations are somewhat erratic, but an actual plot of the curve shows that the point where marginal costs equal marginal revenues is around the $5.00 point. Several smooth curves yield almost identical results (see Figure A.9).

Because both the marginal cost and marginal revenue curves are so steep, this point of market equilibrium under oligopoly behavior is quite robust. That is, if we were to assume that the shape of one of the curves was different, or we were to shift either curve up or down, the result would be largely unaffected. For example, Figure A.10 shows the analysis with the marginal cost curve calculated assuming marginal costs escalated at 15 percent (real) per year (but holding import prices constant). The oligopoly price would be altered little, ranging from $5.00 to $5.10, depending on which specification of the marginal revenue curve is used. If import prices escalate at 15 percent per year, the results still are about the same.

FIGURE A.9

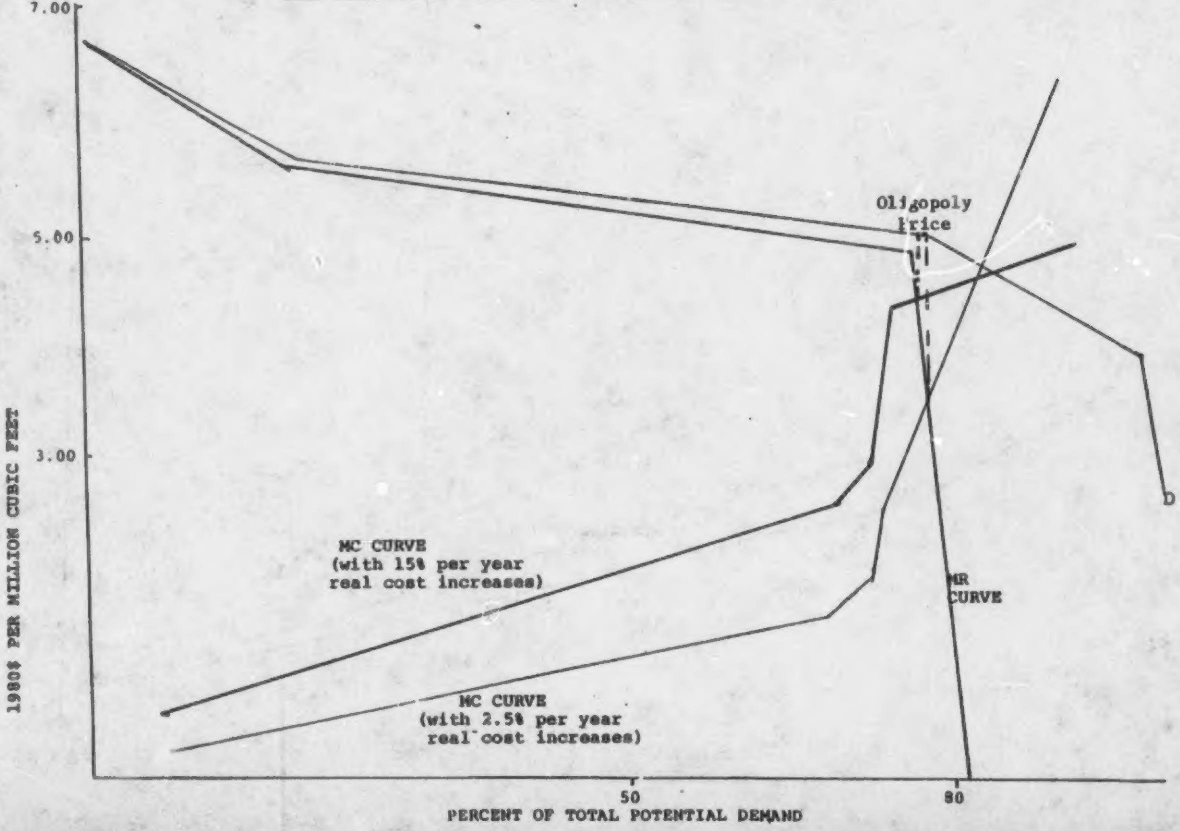
THE OLIGOPOLY PRICE WITH SMOOTHED DEMAND CURVES



Source: Tables A.1 and A.2

FIGURE A.10

THE OLIGOPOLY PRICE WITH HIGH MARGINAL COSTS



Source: See text

It should be noted that the oligopoly price would reduce supply by about 6 percentage points below the competitive market solution. Assuming a higher cost curve, the reduction in supply might be as large as 13 additional percentage points. Thus, an oligopoly assumption will lead to a market price about 10 percent higher than the competitive assumption with the quantity supplied reduced by at least 6 percentage points.

A message of equal significance to be drawn from the analysis is that the oligopoly price will be sensitive to the residential, not the industrial, market. That is, over one-quarter of all the demand occurs as interstate residential demand at $5.08 and this appears to be the critical point on the demand curve.[4] The high sulfur residual oil market is not important to the oligopolist and he foregoes most of it.

The residential demand is the most important point on the demand curve and it is a point about which there are significant differences of opinion in regard to the true elasticity of demand. In the next section, we examine an alternative assumption about residential and commercial demand. This leads us to redraw the demand curve and examine the implications of a differently shaped demand curve for the market price set by oligopolistic behavior.

F. Alternative Assumptions About Residential/ Commercial Sector Demand

In calculating the alternative fuel prices for industrial and electric utility demand, DOE included fuel conversion costs (i.e., the cost of switching to gas) where such costs are assumed to exist. Moreover, at the margin, dual fuel burning capacity was assumed to exist so that there are no conversion costs. DOE did not factor conversion costs into the alternative fuel price for the residential and commercial markets since these markets were not near the theoretical margin.

However, if residential and commercial demand is going to play a critical role in setting the oligopoly price, then the rational oligopolist would definitely want to take conversion costs in those sectors into account. That is, if residential and commercial consumers must incur additional costs to convert from natural gas to some alternative, this raises the effective cost of the alternative fuel. Oligopolists can capture some of this in their price without fear of losing that demand. In fact, there is very little dual fuel burning capacity in the residential and commercial sectors and very significant conversion costs in those sectors.

Let us take a simple example. First, we assume conversion costs of $1400 to be amortized (simple payback) over seven years.[5] Spread over an average annual consumption of 100 million BTUs per year, this would add $2.00/mcf to the effective alternative fuel price.[6] The commercial sector would have larger volumes of gas consumed but higher conversion costs, so that $2.00/mcf is a reasonable estimate for this sector as well. Finally, we assume that all residential and commercial users must incur these costs.

The resulting demand curve (see Figure A.11) becomes much smoother than the earlier curve and less elastic, i.e., steeper. A straight line marginal revenue curve now cuts the marginal cost curve at a lower quantity leading to a higher price. The oligopolist would optimize profits in the $5.40/MCF range and supply would be reduced by an additional 10 percentage points.

This modification of the demand curve leads to rather robust results. If we assume only $1.00/mcf in conversion costs, the oligopoly price would be between $5.30 and $5.40.

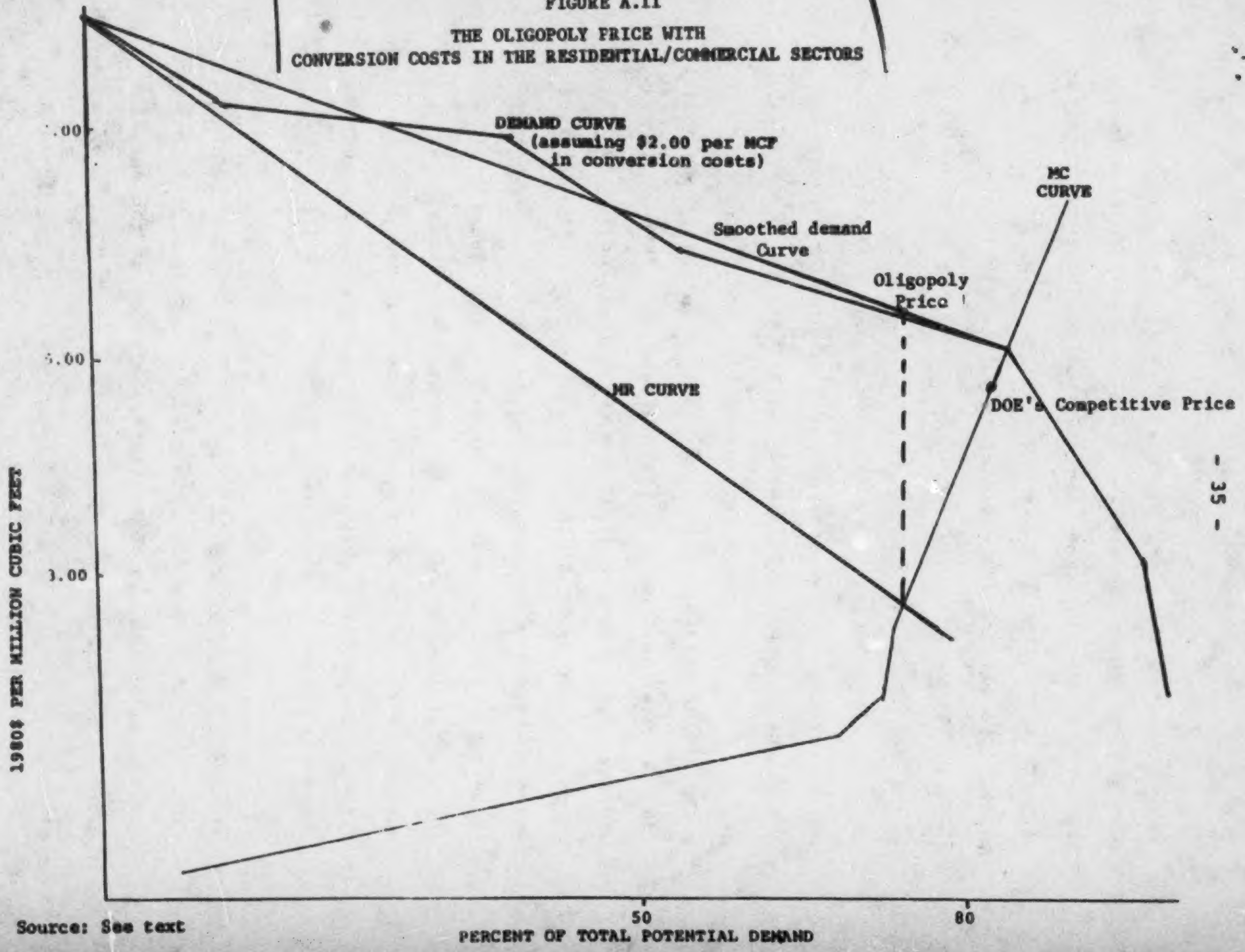
Obviously, different assumptions about conversion costs and/or more detailed analysis of the capacity to switch fuels in the short and long term might alter these outcomes. However, some conversion costs must be factored in and a price range of $5.30-$5.40 for the oligopoly wellhead price seems to be a good estimate. This is a price that is about 15 percent higher than DOE's assumed market clearing price and about twice as high as the industry estimates. The quantity supplied would be about 15 percent below the competitive market solution which means that 30 percent of the total demand is foregone.

G. Summary and Conclusion

In this Appendix, the possible impact of oligopolistic, as opposed to competitive, behavior on the market price of natural gas has been examined.

FIGURE A.11

THE OLIGOPOLY PRICE WITH
CONVERSION COSTS IN THE RESIDENTIAL/COMMERCIAL SECTORS



Source: See text

It has been shown that the configuration of the supply and demand curves is such that oligopolists could administer prices with considerable security. In contrast to the market clearing price estimated by DOE of $4.69/mcf, an oligopoly situation could result in a market price in excess of $5.40, although a range of $5.30 to $5.40 may be more likely.

The estimation of the supply curve also reveals that the rate of return on natural gas production is extremely high -- between 100 and 300 percent. These rates of profit can be presumed to reflect an absence of competitive conditions on the supply side of the market.

From a more general perspective, the shape of the demand and supply curves that have been calculated should caution against simplistic analyses of the gas market even where competition is assumed. Both curves are quite steep (i.e., inelastic) at the point of equilibrium, meaning that they are insensitive to price changes.

FOOTNOTES

[1] DOE, Two Market Analysis of Natural Gas Decontrol (Washington, DC: Government Printing Office, November 1981).

[2] A brief description of the basic structural characteristics of the natural gas market that lead us to this conclusion can be found in Dr. Mark Cooper, Director of Research, Consumer Energy Council of America, "The Implementation of Title I of the Natural Gas Policy Act of 1978," testimony before the Committee on Energy and Natural Resources, United States Senate (November 5, 1981).

[3] Robert S. Pindyck, The Structure of World Energy Demand (Cambridge, MIT Press, 1979).

[4] The slope of the demand curve can be described as follows:

There is a section of the curve (about 20 percent of the total demand) that is relatively inelastic (steep) at high wellhead prices (between $5.70 and $6.70/MCF in 1980 $). This demand occurs in the intrastate market. This block combines high priced alternative fuels with low transmission costs. That is, the wellhead gas price could be quite high because the alternative is expensive and transmission and distribution costs are low.

There is then a second section of the curve (about 60 percent of total demand) that appears quite elastic (between $5.00 and $5.60/MCF in 1980 $). Most of this block (43 percentage points of the 60 percentage points) is made up of the interstate residential, commercial and industrial nonboiler demand. This block combines high priced alternatives with high transmission costs.

Next, there is a block (about 18 percent of total demand) which is relatively inelastic at prices between $3.90 and $5.00/MCF in 1980 $. This is primarily industrial demand -- plus some commercial demand. This includes the category of high sulfur residual.

Finally, there is a small block of demand (about 3 percent) that is very inelastic at low prices. This block is intrastate boiler demand.

In DOE's analysis, the industrial demand between $39.0 and $5.00 is the critical marginal demand. In the oligopoly situation, the residential demand above $5.00 appears to be the critical marginal demand.

[5] See, Consumer Energy Council of America, "An Analysis of the Economics of Fuel Switching Versus Conservation for the Residential Heating Oil Consumer" (Washington, DC, October 5, 1980) for a discussion of conservation costs.

THE PAST AS PROLOGUE II

THE ECONOMIC EFFECTS OF RISING ENERGY PRICES:

A Comparison of the Oil Price Shock and Natural Gas Decontrol

Prepared by

CONSUMER ENERGY COUNCIL OF AMERICA

RESEARCH FOUNDATION

March 1982

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THE PAST AS PROLOGUE II

THE ECONOMIC EFFECTS OF RISING ENERGY PRICES: A Comparison of the Oil Price Shock and Natural Gas Decontrol

A. Introduction

One of the central questions that must be answered in every policy decision affecting energy prices is "What will the economic impact be?" Energy is of such central importance to the conduct of most economic activities that pricing decisions can have a major impact on the level and type of output that our economy produces.

In this report the Consumer Energy Council of America Research Foundation (CECA/RF) analyzes, from a number of perspectives, the relationship between changes in the price of energy and changes in economic activity. First, we make a brief statement of the general theoretical relationship between changes in energy prices and economic activity. Second, we review the record of the impact of the "oil price shock" on the economy. Third, we examine recent projections of the impact of natural gas decontrol.

The central conclusion that the report reaches is that energy price increases have a massive, negative impact on the economy, an impact that persists for a considerable length of time -- at least a decade. Further, policies to mitigate that impact -- at the level of individuals and at the level of the general economy -- have either not been effective in the past or have simply never been developed and implemented. The prospects for natural gas decontrol appear to be equally bleak.

B. Energy and the Economy: A General Conceptualization

The negative economic impact of rising energy prices occurs in two interconnected ways. There tends to be a reduction in the level of output and also a loss in productivity.

1. Economic Activity

The reduction in output that rising energy prices may cause stems from the fact that, in the short run, it is difficult to find substitutes for energy in many economic activities (i.e., it is price inelastic).[1] When prices rise, a larger share of income must be devoted to energy because consumption cannot be reduced in the short run. The increase in income devoted to energy prices may appear in two ways. First, the income spent directly for energy, e.g., household heating fuels, etc., will rise. Second, the energy costs related to producing all goods and services will rise. If the producers of these goods and services are able to pass through the increase in energy costs to consumers, then there will be a general increase in the price level of those goods. If they are not able to pass the increase through, there will be a reduction in profits in non-energy sectors.

Given the general tendency of prices in our economy not to decline, the response to a rise in energy prices tends to be an increase in the general price level. That is, rising energy costs will be passed through. If the money supply does not expand to accommodate the price increase and wages do not rise as fast as prices increase, then the price increase reduces real income (i.e., the same number of dollars purchases fewer goods and services).[2] Reduced real income means lower consumption outlays and lower real GNP.

This effect can be compounded by an increase in interest rates.[3] Rising prices lead to an increased demand for credit to finance higher levels of spending or investment. Again, if monetary policy is not accommodative, as interest rates rise (due to increased demand and tight money supply) the costs of financing consumption or investment increase and the level of real spending declines.

In reality, the response of the economy to price increases tends to be a mixture of these possibilities. Most of the price increases are passed through (with a lag) and wages try to keep up (with a longer lag). The general consensus is, however, that in the short run, there is an unavoidable (1) increase in prices, (2) reduction in real income, (3) reduction in real output and, as a consequence, (4) an increase in unemployment. There is also an emerging consensus that accommodative, rather than tight, monetary and fiscal policy can reduce these impacts, but not eliminate them.

While there is a general consensus that short run negative impacts occur when energy prices are increased, there is no consensus about just how long the short run is or how large the impacts will be.[4] Some argue that the adjustment period can be quite long -- well over a decade; others envision shorter periods of adjustment, up to a decade.

2. Productivity

Rising energy prices can also have a negative impact on productivity for a number of reasons.[5]

1. Because the utilization of labor and capital declines more slowly than the decline of output, productivity declines (i.e., labor is "hoarded" and capital is not scrapped at a sufficiently rapid pace to keep productivity up).

2. As economic activity declines, the general rate of investment drops off, slowing productivity growth.

3. As energy prices rise, capital and labor are substituted for energy in the production process and that means less output per unit of capital and labor input.

4. Insofar as capital and labor are not perfect substitutes for energy, an additional loss in productivity occurs.

5. The need to invest in energy savings delays the investment in equipment designed to enhance labor productivity. This reduces the growth in the productivity of labor.

The first and second effects are principally short term effects; the third, fourth and fifth effects may be somewhat longer term in nature. Once again, there tends to be general agreement that these effects occur; but there is rather wide disagreement about how large they are and how long they last.[6]

3. Potential Benefits

It should be noted here that there are potential efficiency benefits of decontrol. Three such benefits can be noted.[7]

1. It is possible that more aggregate output can be achieved for each unit of domestic resources expended in acquiring a given level of energy supply. That is, if resources are diverted from the search for hard-to-find energy sources to more easily located and/or produced sources, then less real resources will be used to produce the same amount of available energy.

For example, if incentives have been structured by partial decontrol to direct exploration toward more expensive deep gas, then full decontrol might cause producers to shift their exploration toward less expensive shallow gas.

Producers could consume fewer resources in finding the same amount of gas.

These saved resources can then be put to alternative uses in society. If the reduction in real resource costs is reflected in lower energy prices, consumers will have the additional real resources at their disposal. If energy prices do not fall, then energy producers will have the additional real resources at their disposal.

2. If domestic supplies replace imports and reduce the aggregate import bill, then domestic economic activity will be stimulated to the extent that resources kept in the domestic economy recycle through the economy more efficiently tnan exported dollars.

3. Controlled energy prices may result in too much energy being consumed by certain consumers and, if some form of energy rationing results, too little being consumed by others. This inefficient allocation may reduce the magnitude of total output.

The first set of benefits tends to be long term in nature. The second and third are both short and long term. Again, considerable difference of opinion exists over the magnitude of these potentially positive impacts because they are critically dependent on whether resources are actually made available, on whom has access to them and on the uses to which they are put.

4. Conclusion

Economic theory does not lead to clear conclusions about the ultimate impact of the decontrol of energy prices. That is, there is a sound theoretical basis to expect significant economic and productivity losses and a sound theoretical basis to expect some resource gains, but there is no theoretical basis for deciding which will be larger. The bottom line is an empirical issue, not a theoretical one. That is, the ultimate impact is determined by the shape (elasticity) of the demand and supply curves for energy (which determines the benefits) and the elasticity of substitution between energy and other factors of production (which determines the costs). Appendix A presents a brief conceptualization of this issue. However, it should be most emphatically noted that, as the following discussion shows, the empirical evidence strongly suggests that the potential efficiency benefits do not outweigh the costs. The empirical answer seems to be negative.

The disagreement over the magnitude and duration of the impact of decontrol is most frequently expressed in the results of the econometric models which are used to simulate the behavior of the economy. The next section reviews the impact of the oil price shock on the economy as seen through the eyes of a number of econometric models. All of the models tend to confirm the general conceptualization presented above, although they differ in details.

C. The Oil Price Shock

1. Prices and Inflation

The first, critical macroeconomic issue relating to decisions affecting energy prices is the magnitude and speed of the price increase. The greater and more rapid the price increase, the greater the impact will be throughout the economy. For two major reasons, price increases should be studied first and separately from other macroeconomic impacts such as the impact on unemployment, changes in output, etc.

First, as noted above, the price increases are the trigger to the transfer of resources on the demand side and the escalation of costs on the supply side.

Second, to a considerable extent, price and inflationary impacts can be studied in a simple fashion without complicating assumptions, projections or econometric models. Other economic impacts cannot be studied in such a format.

The magnitude of price increases in crude oil and petroleum products resulting from decontrol is described in Table 1. Price increases in crude oil at the wellhead, refiner acquisition costs, and product prices were all well in excess of 64 percent between June 1979 and November 1981.

These price increases in petroleum products far exceeded the increases in the Consumer Price Index (CPI). All items in the CPI increased by 31 percent in that two year period. Of course, energy prices are one important component of the CPI itself, so that non-energy items in the

Table 1

RISING PRICES SINCE DECONTROL

	May 1979	November 1981	Percentage Increase
Refiner Acquisition Costs[a]			
Domestic Crude ($/bbl)	12.41	33.49	169.9
Importedd Crude ($/bbl)	19.00	36.21	90.5
Consumer Prices[b]			
Heating Oil ($/gallon)	.656	1.209	84.2
Gasoline ($/gallon)	.823	1.351	64.2
Energy (index, 1967=100)	260.8	417.6	60.2
Consumer Price Index[c]			
All Items (index, 1967=100)	214.1	280.7	21
All Non-energy Items (index, 1967=100)	210.7	270.4	28

Source: U.S. Department of Energy

[a] Monthly Energy Review, various issues

[b] U.S. Bureau of Labor Statistics, Consumer Price Index

[c] Consumer Price Index, various issues

Index increased more slowly than the overall index. An index composed of all non-energy items would have increased only 28 percent in that period.

Moreover, rising petroleum prices have an indirect impact on all non-energy items in the index. That is, rising energy prices increase the cost of other items, as noted above. It is possible to estimate what the CPI would have been if energy prices had not been rising so rapidly. Such estimates vary depending on the econometric models used and the assumptions made about what prices would have been in the absence of decontrol. However, a review of a number of econometric analyses shows that the impact of rising oil prices on the GNP deflator was estimated to be in the range of a 2.7 to 3.0 percent cumulative increase between 1979 and 1981 (see Table 2). The impact on the CPI was somewhat higher, in the range of 3.9 to 4.9 percent.

Because these models were run in late 1979 and early 1980 they are partly retrospective and partly prospective with regard to the energy price shock of 1979-80. Thus, it is important to note that most of the estimates contained in Table 2 were based on estimated oil prices that were understated by about 30 percent because the analyses were performed before the spate of increasing prices had run its course. Therefore, the estimated impact of oil price increases on the GNP deflator should probably be in the 3.9 to 4.3 percentage point range, while increases in the CPI should probably be in the 5.6 to 7.0 percentage point range.

Table 2

ANNUAL CHANGES IN INFLATION DUE TO OIL PRICE INCREASES
(in percent)

Source	1979	1980	1981	1982	1983	1984
Congressioinal Budget Office						
May 1979: Decontrol only, GNP deflator[a]	+ .1	0	+ .3	0	0	0
June 1979: Decontrol only, GNP deflator[b]			+ .1	+ .4	+ .5	na
June 1980: Decontrol only, GNP deflator[c]	+ .2	+1.1	+1.7	+ .6	na	na
June 1980: Decontrol only, CPI-W[c]	+ .3	+1.5	+2.1	+ .7	na	na
Wharton (June 1980)[d]						
Second half of decontrol only: CPI (gasoline tax assumed)	na	- .92	+1.01	+2.01	na	na
Mork and Hall[e] (Nov. 1979)						
Total energy shock:	+1.8	+1.3	+ .1	na	na	na
Eckstein (DRI)[f] (Nov. 1979)						
Total energy shock: GNP	+ .9	+1.5	+ .4	- .2	0	+ .4
Total energy shock: Personal consumption deflator (CPI)	+1.1	+2.3	+1.5	+ .9	+ .6	+ .8
Thurman and Berner (MPS)[g] (Nov. 1979)						
Total energy shock: GNP deflator	+ .1	+1.1	+1.5	+ .5	- .3	na
Total energy shock: Personal consumption deflator (CPI)	+ .7	+1.6	+1.4	+ .5	- .2	na

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[a] Congressional Budget Office, The Decontrol of Domestic Oil Prices: An Overview (Washington, DC, May 1979), p. 45.

[b] Congressional Budget Office, Memorandum from Roy Scheppach to Jim Cubie (Washington, DC, July 12, 1979).

[c] Hearing before the Subcommittee on Energy of the Joint Economic Committee, Congress of the United States, Impact of Energy Prices and Inflation on American Families, July 8, 1980 (Washington, DC 1981), p. 72.

[d] Ibid., p. 65.

[e] Kurt Anton Mork and Robert E. Hall, "Macroeconomic Analysis of Energy Price Shocks and Offsetting Policies in Kurt Anton Mork, ed., Energy Prices, Inflation, and Economic Activity (Cambridge, Ballenger, 1981).

[f] Otto Eckstein, "Shock Inflation, Core Inflation and Energy Disturbances in the DRI Model," in Mork, Energy Prices.

[g] Stephan Thurman and Richard Berner, "Analysis of Oil Prrice Shocks in the MPS Model," in Mork, Energy Prices.

This range of estimates is consistent with a rule of thumb that is frequently used to estimate the impact of rising energy prices on consumer prices.[8] For every one percentage point that energy prices raise the CPI directly, it is assumed that indirect impacts will add an additional .5 to 1 percentage points. In Table 1, it was shown that the direct contribution of energy prices to the CPI was about 3 percentage points. The rule of thumb would have indicated a total impact of 5 to 6.6 percentage points.

A recent estimate by the U.S. Department of Energy using a modified version of two of the models included in Table 2 (Wharton and DRI) and data which reflects the full impact of rising prices confirms these estimates.[9] According to DOE, price increases in all energy sources are found to have contributed between 4.1 and 5.5 percentage points to the GNP deflator and between 5.7 and 7.3 percentage points to the CPI in 1979 and 1980 combined.

Thus, it seems safe to say that oil price increases accounted for between 20 and 25 percent of the total inflation felt in the 1979-1981 period. Such an impact undoubtedly had major implications for the economy. It also certainly had an impact on the restrictive monetary and fiscal policies that were pursued during this period in an effort to lower the rate of inflation.

2. The Impact on Economic Activity

With price increases great enough to affect the GNP deflator and CPI so dramatically, one must expect to observe rather large decreases in economic activity. Estimating these impacts relies almost entirely on econometric modeling. As noted above, such modeling is subject to a high degree of uncertainty. The differences that exist between econometric models result from differences in the way they try to simulate the economy. The uncertainty of the modeling stems from differences in the structure of the econometric models (assumptions and parameters) and differences in estimates of input variables (energy prices). Major differences center on the assumptions about and the detail with which the models handle the response to rising energy prices of labor (in its wage demands) and industry (in changing the amount of energy, labor and capital used in production).

In spite of the differences between the models, a number of them produced fairly consistent estimates of the impact of rising energy prices (see Table 3). We are inclined to stress their similarities, rather than their differences. Aside from the CBO analysis, which was based on very low price estimates because it was done very early, and Wharton, which took only the later stages of price increases into account, the other analyses show that the loss of GNP is in the range of 2.5 to 4.3 percentage points in the 1979-1981 period. The increase in unemployment falls

Table 3

CHANGES IN ECONOMIC ACTIVITY AS A RESULT OF RISING OIL PRICES

	1979	1980	1981	1982	1983	1984
GNP Changes						
CBO, May 1979: Decontrol only	.0 to -.1			.0 to -.2		
CBO, June 1979: Decontrol only	.0 to -.2			-.2 to -.4		
Total Energy Price Shock						
Wharton	na	- .3	- .3	- .6	na	na
Mork and Hall	-1.1	-2.8	+ .4	na	na	na
Eckstein	-.1	-2.2	-2.0	+ .5	+ .6	+ .9
Thurman and Berner	- .5	- .9	-1.4	-1.2	-1.0	na
Employment Changes						
CBO, May 1979	0			0 to + .2		
CBO, June 1979	+ .1			+ .1 to + .3		
Wharton	-	.14	.36	.76	na	na
Mork and Hall	+ .4	+1.2	+ .9	na	na	na
Eckstein	0	+ .4	+1.3	+1.2	+ .7	+ .7
Thurman and Berner	+ .1	+1.3	+1.4	+ .5	+ .1	- .1

Sources: See Table 2.

in the 1.5 to 2.8 percentage point range. Once again, these estimates are based on energy price projections that were about 30 percent too low because they were done before the rise in energy prices had run its course. Therefore, the negative economic impact was in fact greater than the models predict. Considering actual energy prices, it would be reasonable to assume that the loss in GNP was on the order of 3.5 to 6.1 percent and the increase in unemployment was between 2.1 and 4 percentage points.

Again, the recent econometric analyses conducted by DOE tend to confirm these results.[10] Incorporating the full magnitude of price increases, DOE estimates that a loss in GNP in 1978-80 of between 5.1 and 5.9 percent and an increase in unemployment of between 1.4 and 3.8 percentage points can be attributed to rising energy prices.

The behavior of specific elements of the economy also conforms to the predictions of macroeconomic theory (as described above). In 1979 and 1980, investment suffered a major setback as a result of the oil price shock -- a reduction of as much as 12 percent.[11] Productivity was reduced as well, by as much as 3 percent.[12] Some estimates show that as much as one-third to one-half of the slow-down in productivity growth may have been due to energy price increases.[13] Expenditures on consumer durables were also particularly hard hit.[14] Investment in residential housing structures may have been reduced by as much as 15-20 percent while sales of American automobiles may have been reduced by as much as 40 percent.[15]

3. Assessing the Impact

Judging the actual significance of the negative economic impacts can be a matter of perspective. It has become common among those inclined to downplay the importance of energy to focus on the entire period after the OPEC oil embargo (1973) in order to place the 1979-80 oil price shock in the context of a generally bad economic period.[16] Table 4 shows that the economy took a decided turn for the worse in 1973-80, compared to the previous eight years. The rate of growth of real GNP, real disposable income, investment and productivity slowed dramatically, while inflation and unemployment increased. Part of the downturn -- at least one-third and probably one-half -- can definitely be attributed to the energy price shock.

Some analysts focus on that part of the downturn which energy prices did not cause and look for a bigger "picture," thereby downplaying the importance of energy price increases. CECA/RF is inclined to take the opposite view.

We are struck by the fact that so much of the downturn can be attributed to this one factor. Energy is obviously a very major influence on economic activity. One will look in vain to find any other single factor that is as important. Moreover, there are even ways in which these

Table 4

THE IMPORTANCE OF RISING ENERGY PRICRES IN DETERMINING ECONOMIC PERFORMANCE

	Actual			Hypothetical Assuming no Energy Price Increase	Change Attributable to Energy Prices	% of Change Attributable to Energy Prices
	1965-1972 (1)	1973-1980 (2)	Change (3=1-2)	(4)	(5=2-4)	(6=5/3)
Real Growth of GNP (% per year)	3.5	2.4	-1.1	2.8	- .4	36
Real Disposable Income (% per year)	4.0	2.4	-1.6	3.3	- .9	56
Growth of Real Fixed Investment	4.0	.4	-3.6	2.0	-1.6	44
Rate of Change in CPI (Percentage points)	+4.1	+9.2	+5.1[a]	+6.9	+2.3[b]	45
Rate of Growth of Productivity (% change/year of output per person hour)	2.0	.2	-1.8	1.6	.4	22
Unemployment Rate (Average annual)	4.5	6.6	+2.1[a]	5.4	+1.2[b]	57

a/ Column 2 minus column 1.
b/ Column 4 minus column 2.

Source: DOE, The Interralationship of Energy and the Economy, 1981, Chapter 2.

analyses underestimate the impact that rising energy prices can have.

First, when the econometric analyses are conducted, only energy prices are changed in order to simulate what would have happened in the economy without a change in prices. This overlooks the fact that, as energy prices rose, many policy decisions were made in response to those rising prices. Is it really possible to separate energy price increases from the policy decisions which they directly caused and to which they were inseparably connected?

The most important policies in this regard are fiscal and monetary policies. As rising energy prices increased the rate of inflation, policy-makers responded by tightening the money supply and reducing fiscal deficits in an effort to slow inflation down.[17] Of course, these policies have recessionary impacts of their own, impacts which reinforce the impact of rising energy prices. Most analyses show that the restrictive monetary and fiscal responses to rising energy prices doubled the recessionary impact.[18] In this sense, energy prices caused about one-third of the economic problem directly and another one-third of the problem indirectly through the impact of energy price increases on monetary and fiscal policy. Thus, if one assumes a different path of energy prices, one should probably assume different fiscal and monetary policies as well.[19]

A second way in which the econometric analyses underestimate the impact of rising energy prices is not easily quantifiable, but it is nonetheless real. Rising energy prices had a major impact on the mood of the public and on policy-makers. The econometric analyses show that in the absence of rising energy prices, there would have been almost no recession in 1974-75 and no recession in 1980.[20] There would have been no "double digit inflation" at any time in the decade.[21] In this regard, energy pushed the economy past several major psychological thresholds (i.e., into a recession and over the double digit mark in inflation).

In 1980 alone, had energy prices not increased so rapidly, as many as three million fewer people would have been unemployed.[22] As many as two million more American automobiles would have been sold and an additional 250,000 housing starts would have been undertaken.[23] Here, too, critical psychological thresholds would have been avoided, especially rates of unemployment that rivaled those of the great depression in two of America's largest industries.

In short, the entire economic environment would have been different. The public mood would have been much less pessimistic, and certainly could have led to different consumption and saving patterns. Policy-makers would not have been thrashing about in search of economic quick fixes. The economy would have remained much closer to its historical path of relatively rapid and relatively stable expansion.

In this sense, energy may have been more than two-thirds of the problem -- one-third due to the direct impact of rising prices, one-third due to the indirect impact through monetary and fiscal policy, and an additional, unmeasurable amount due to the qualitative impact of having the economy appear to be in a state of utter chaos and on the brink of collapse. In the context of energy-price-policy-decisionmaking, it is important to recognize that in the 1970s and especially the 1979-80 period, the economy was not collapsing -- rather, to a very considerable degree, it was being crushed by energy prices. Had this been recognized, very different economic and energy policy decisions might have been made.

Two other general observations on these economic impacts are in order before we turn to the discussion of natural gas decontrol.

First, the general principle that lost purchasing power resulting from rising energy prices cannot be recouped in the short or mid-terms can be demonstrated on the basis of these estimates. In an earlier work, CECA/RF estimated that due to rising oil prices about $160 billion in real purchasing power was lost in the 1979-1981 period (in 1978 dollars).[24] If we use an estimate of 5 percent of GNP lost due to the oil price shock, then we conclude that about $130 billion was lost in real GNP (1978 dollars) through the end of 1981. Thus, about 80 percent of the loss in purchasing power is translated into a loss in GNP in the short run.

Second, it is important to note that the economic impacts persist over a long term. The headlines devoted to rising energy prices may pass quickly once the shock is over, but the negative economic impacts of those prices will keep working their way through the economy. Most of the models project a cumulating negative impact that lasts 5 to 10 years. There then ensues a period in which part of the economic losses may be recovered. In the long run, there remains an appreciable loss in total GNP.

D. Natural Gas Decontrol

1. Introduction

Having reviewed the theoretical explanations of why rising energy prices should be expected to have a negative impact on the economy and the empirical evidence which shows that oil price increases did affect the economy as predicted, we turn to the projections of the impact of rising natural gas prices on the economy. There are a number of reasons that we should expect rising natural gas prices to have significant negative economic impacts.

2. The Expected Impact of Natural Gas Decontrol

a. Prices

In a separate report, "Past as Prologue I: The Underestimation of Price Increases in the Decontrol Debate," CECA/RF has analyzed in detail the question of the price increases likely to follow from accelerated/phased decontrol of natural gas.[25] We have demonstrated that the price increases that will occur under accelerated decontrol of natural gas are quite similar to the price path that oil took during the oil price shock of 1979-80. This is one reason we would expect the economic impact following natural gas decontrol to be similar to the economic impact of the oil price shock. Below, we will show that the relationship between natural gas price increases and changes in the GNP deflator is very similar to the relationship between oil price increases and changes in the GNP deflator.

b. Fuel Uses

Second, the general arguments made above about the mechanisms by which energy price increases are translated into economic slowdowns certainly hold for natural gas. That is, the conceptual relationship between energy and the economy holds for gas. In fact, there are reasons to expect that the natural gas price increases might have even larger negative effects than oil price increases. These relate to the price elasticity of energy -- the key link between energy price increases and macroeconomic activity. That is, the ability to substitute for energy in the short and long term as a response to price increases dictates the impact of those price increases on the economy.

Although the aggregate price elasticity of natural gas appears to be similar to that of crude oil, the price elasticity in industrial uses is much lower.[26] Most studies suggest that the price elasticity of natural gas in industrial uses is only about one-half as large as the price elasticity of petroleum in industrial uses. Thus, natural gas price increases pose a greater problem of structural adjustment in the economy. This is especially true of the longer term productivity and economic impacts discussed above.

The analogy between the impact of oil and gas prices on the economy should not be taken too literally. There are obvious differences between the two fuels. First, we consume much more petroleum. Second, a much larger percentage of the petroleum we consume is imported from abroad. If one wishes to extrapolate from the analysis of the oil price shock to the impact of natural gas decontrol, great care must be taken.

Appendix B presents a number of steps that must be taken in order to make the comparison. It shows that the econometric analyses of the oil price shock, when used to predict the impact of natural gas decontrol, lead to reasonable estimates if they are treated properly.

c. Production

It should be noted, from the point of view of the domestic supply of energy, that oil and gas are produced in roughly the same geographic areas with roughly the same technology. The largest domestic producers of oil are also by far the largest domestic producers of gas.[27] Clearly, there is good cause to draw parallels between the two fuels.

3. Considerations in Deriving a Best Estimate of the Impact of Natural Gas Decontrol

Having seen that both theory and recent energy price history suggest significant economic impacts of natural gas decontrol, we review in this section a number of econometric estimates of the impact of natural gas decontrol on inflation, output and unemployment. The objective is to arrive at a best or a most reasonable estimate of those impacts. In order to do so, it is necessary to follow a very carefully conceived approach to the analysis. The following steps have been taken.

a. The Time Frame

Because the various decontrol scenarios do not agree on the quantity and price of gas that will be decontrolled, or the time period over which decontrol will occur, it is often difficult to compare econometric results on a year by year basis. However, most scenarios begin to converge by the third year after decontrol begins. Moreover, short term economic impacts do not occur instantaneously. It takes several years for the initial recessionary shock of the price increase to be fully registered. Therefore, the impact of decontrol will be calculated in terms of three year increments and we have estimated 3, 6 and 9 year impacts.

b. Standardized Impacts for Price Increases

Because price increases are the key to triggering the economic impact and because decontrol scenarios differ dramatically in the magnitude of the increase that they project, we have also calculated the impacts on a standardized basis. We have chosen to examine the impacts associated with a specific percent increase in prices.

In stating the impacts in the first three year period, we use estimates of the impact that would occur for a 100 percent increase in the first three years. That is, if prices double (increase by 100 percent) in the first three years, what will the impact be over the first three years?

However, for the six year and nine year impacts, we estimate the impact as a function of the five year price increase. That is, if prices double in the first five years, what will the impact be over the first six years? Similarly, if prices double in the first five years, what will the impact be in the first nine years? The reason the five year price increase is used to estimate the impacts of decontrol in the six and nine year periods is that all analyses exhibit only small real price increases after the first five years. That is, they are predicated on the assumption that early price shocks are working their way through the economy and no new price shocks are projected.

For the purposes of making the standardized estimate of impact (i.e., impact per 100 percent price increase), we have assumed that the impact is a linear function of price increases. For example, impacts estimated on the basis of a 68 percent price increase are scaled up to a 100 percent increase by dividing the impact by .68; impacts estimated on the basis of a 162 percent price increase are scaled down to a 100 percent price increase by dividing by 1.62. This may underestimate the impact of larger price increases since theory gives us some reason to expect increasing non-linear trends (i.e., larger increases have disproportionately larger impacts). The data do suggest a slightly increasing non-linear trend.

c. Full and Partial Decontrol

The analyses of full decontrol are treated separately from the analyses of partial decontrol. Full decontrol produces a different price path than partial decontrol, with price increases heavily concentrated in the early years. One would expect a different impact on the economy to result from these price paths, at least in the short term.

d. Modified Models

Because econometric models are not designed specifically to deal with energy price shocks, they may not simulate the economy's response to these price shocks with the same precision that they simulate the economy's "normal" operation. The Department of Energy has made efforts to alter the standard models (Wharton and DRI) to make them more sensitive to the economic responses that economic theory predict will occur when energy prices rise.[28]

Many of the adjustments are well-founded. That is, the models assume that the economy is more rigid than it actually is and, therefore, the models may over estimate the impacts. For purposes of comparison, the results of the econometric models in both their modified and unmodified forms have been included where they are available.

At the same time, it should be noted that one model utilized by DOE -- the Hudson/Jorgenson model -- is radically different from the other models.[29] It does not include a price-wage-price spiral, which is a major element of the other models. The exclusion of the price-wage-price spiral dampens the inflationary and other impacts compared to the other models and may lead to an underestimation of the impacts. This will become apparent when the results are reviewed.

The above steps, when applied to each of the available analyses, should lead to estimates of the impact of natural gas price increases that are comparable to one another.

e. An Adjusted Base Case

One additional methodological point should be made. All of the econometric analyses examine the impact of accelerating or expanding the decontrol of natural gas beyond the price increases that are programmed into the

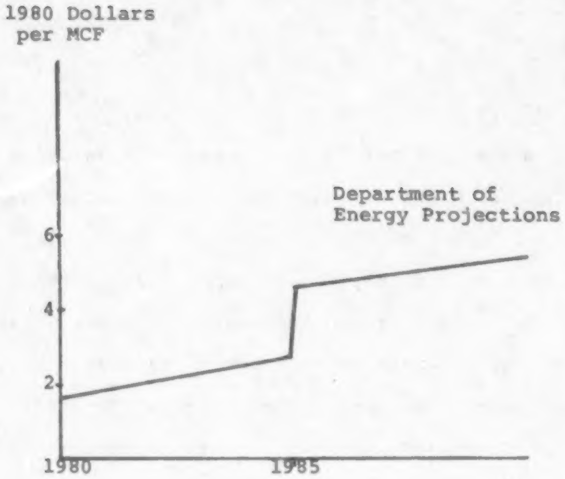
Natural Gas Policy Act. Therefore, the baseline against which accelerated decontrol is measured incorporates fairly steeply rising prices (see Figure 1). Rising prices such as these would have been negative economic impacts of their own. By focusing exclusively on accelerated and expanded decontrol, it becomes all too easy to overlook the overall economic impact of rising natural gas prices. If one focuses only on accelerated decontrol, one can quickly lose sight of the forest by looking at the trees.

For purposes of estimating the overall impact of rising natural gas prices on the economy, we have made rough estimates of what the model results would have been if they had been run with a base case that assumed flat real prices. This is not to suggest that flat real energy prices are to be expected. Rather, it is conventional in estimating the impact of price changes to measure them against a base case which assumes flat prices.

In the short term (3 years), we derive the adjusted estimate as follows: the impact of a 100 percent price increase is multiplied by 1.26, reflecting the fact that DOE projects a 26 percent real price increase in gas prices under NGPA.[30] The adjustment in the second three year period are based on econometric analysis done by DOE on the impact of NGPA compared to a flat price base case.[31] For longer periods no adjustment factor is available.

FIGURE 1

AVERAGE WELLHEAD PRICES UNDER
THE NATURAL GAS POLICY ACT



Source: U.S. Department of Energy, A Study of Alternatives to the Natural Gas Policy Act of 1978 (Office of Policy, Planning and Analysis, Division of Energy Deregulation, November, 1981) p. 11.

4. Estimates of the Impact of Natural Gas Decontrol

a. Inflation

Table 5 presents estimates of the impact of decontrol on inflation as measured by changes in the GNP deflator.

i. Short Term

The estimates for the impact of natural gas price increases on inflation in the short run (3 year impact per 100 percent price increase) are quite consistent. That is, all estimates fall in a fairly narrow range. For partial decontrol the low estimate is an increase of 2.1 percentage points and the high estimate an increase of 3.4 percentage points. The average is 2.7 percentage points. The full decontrol analyses estimate similar impacts, although the average is slightly lower (+2.2 percentage points). This would be a function of the fact that three of the five models in the full decontrol analyses have been "modified" by DOE and would necessarily predict smaller impacts.

Thus, a range of 2.2 to 2.7 percentage points added to the rate of inflation for every 100 percent gas price increase over three years as a result of accelerated gas decontrol would seem reasonable. In other words, an average annual increase of between .7 and .9 percentage points in the GNP deflator can be expected for any decontrol scenario which doubles prices over a three year period. The midpoint of the range would be 2.5 percentage points over 3 years or .8 percentage points per year.

Table 5

ESTIMATION OF THE IMPACT OF NATURAL GAS DECONTROL
ON INFLATION
(Measured by GNP Deflator)

	Price Changes (in %)		Change in Inflation (Percentage points)			Change in Inflation, Standardized Basis (per 100% price Increase)		
	3 yr	5 yr	3 yr	6 yr	9 yr	3 yr	6 yr	9 yr
NATURAL GAS								
Partial Decontrol								
Wharton[a]	228	237	+7.8	+4.8	+ .8	+3.4	+2.0	+ .4
DOE 1/DRI Partial[b]	103	160	+2.1	- .1	+ .1	+2.1	- .1	+ .1
DOE 2/DRI Partial Modified[c]	68	124	+1.8	+ .1	+ .1	+2.6	+ .1	+ .1
Average	133	174				+2.7	+ .7	+4.2
Adjusted to Flat Base						+3.3	+2.5	+ .2
Full Decontrol								
DOE 1/DRI[b]	165	217	+3.7	+1.2	+1.5	+2.2	+1.5	+ .7
DOE 2/DRI Modified[c]	112	130	+2.5	+1.9	+ .8	+2.2	+1.5	+ .6
DOE 2/DRI Modified[c]	112	130	+2.5	+1.9	+ .8	+2.2	+1.5	+ .6
DOE 2/Wharton (modified)[c]	112	130	+3.1	+ .3	+ .1	+2.8	+ .2	+ .1
DOE 2/HJ[c]	112	130	+1.6	- .2	- .3	+1.4	- .2	- .2
Average	122	147				+2.2	.7	+ .4
Adjusted to Flat Base						+2.7	+2.5	+ .4

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[a] Wharton Econometric Forcasting Associates, referenced in Dunn's Business Month, November, 1981.

[b] U.S. Department of Energy, Reducing U.S. Oil Vulnerability, November 10, 1980, Chapter II.

[c] U.S. Department of Energy, Macroeconomic Consequences of Natural Gas Decontrol, November 1981. Attachment 1 describes the Hudson/Jorgenson Dynamic General Equilibrium Model, referred to as DOE/HJ. Attachment 2 describes the DRI Model, referred to as DOE 2/DRI and the modifications to it. Attachment 3 describes the Wharton Model, referred to as DOE 2/Wharton, and the modifications to it.

ii. Long Term

In the longer term, the estimates become somewhat more varied. For example, the estimates of six year impacts of natural gas decontrol on inflation range from -.1 percentage points to +2.0 percentage points. The average is +.7 percentage points. Thus, the range is much wider compared to the mean. The same is true for the full decontrol analyses which have a range of -.2 to +1.5 percentage points. Here again, the mean is .7.

The six year impact analysis suggests that the impact of accelerated decontrol converges to the NGPA base. That is, the specific impact associated with accelerating decontrol and extending it to other categories of gas appears to have a large impact in the early years, but a smaller impact in the later years. This occurs because large price increases would occur in this period anyway due to the decontrol of gas prices programmed into NGPA. Over the first six years, the impact specific to changing NGPA would be about .11 percentage points per year added to the rate of inflation. This would be in addition to the impact of NGPA.

Thus, it is important to keep in mind that the total impact of rising natural gas prices would be larger than .11 percentage points. As the analysis adjusted to a flat base case shows, the total impact of rising gas prices would be to add about .5 percentage points to the rate of inflation every year for six years, cumulating to more than 2.5 percentage points.

In the nine year period, all the econometric models predict that the two price trajectories continue to converge. However, all but one of the models predict that the accelerated decontrol price path will remain above the NGPA price path. It would be considerably above a flat price path as Figure 1 indicates, although no estimate is available.

iii. Modified Models

It might be noted here that the modifications to the DRI model appear to have little impact on the estimates of the inflationary impact of rising natural gas prices. The Wharton model, which predicts large inflationary impacts, appears to be more affected by the modifications. On the other hand, the model which excludes a price-wage-price spiral (DOE, H/J) behaves rather differently than the other models. It predicts much smaller inflationary impacts. This outcome is an obvious, direct result of the assumption of no price-wage-price spiral.

b. Output

Table 6 presents the econometric estimates of the loss of output due to accelerated decontrol of natural gas. These results are generally as consistent as the results for inflation.

Table 6

ESTIMATION OF THE IMPACT OF NATURAL GAS DECONTROL
ON OUTPUT
(Measured as Change in GNP Deflator)

	Price Increase		Change in GNP			Change in GNP Standardized Basis (per 100% price Increase)		
	3 yr	5 yr	3 yr	6 yr	9 yr	3 yr	6 yr	9 yr
Partial Decontrol								
Wharton	228	236	+2.0	- .8	- .4	- .9	- .3	- .2
DOE 1/DRI	103	160	-2.5	-1.7	-1.6	-2.4	-1.1	-1.0
DOE 2/DRI	68	124	- .8	- .1	- .1	-1.2	- .1	- .1
DOE 2/HJ	68	124	- .6	- .1	+ .4	- .9	- .1	+ .3
Average						-1.35	- .4	- .3
Adjusted to Flat Base						-1.67	-3.2	- .2
Full Decontrol								
DOE 1/DRI	165	217	-4.9	-4.0	-3.4	-3.0	-1.8	-1.6
DOE 2/DRI (unmodified)	112	130	-1.5	-1.1	-1.8	-1.3	- .8	-1.4
DOE 2/DRI (modified)	112	130	-1.4	- .9	-1.3	-1.3	- .7	-1.0
DOE 2/Wharton (modified)	112	130	-1.0	- .8	- .9	- .9	- .6	- .7
DOE 2/HJ	112	130	- .7	- .3	+ .2	- .6	- .2	+ .2
Average						-1.3	- .8	- .9
Adjusted to Flat Base						-1.6	-3.6	- .9

Source: See Table 5.

i. Short Term

On average, GNP is predicted to be 1.35 percent lower during the first three years of accelerated decontrol (about .4 percent lower per year), if the price increase is 100 percent in those three years. The range of estimates is fairly narrow: -.9 to -2.47 percent for partial decontrol and -.6 to -3.0 percent for full decontrol. If an adjustment to a flat base case were made, the loss in GNP would be somewhat larger. The loss in GNP adjusted to a flat base would be between 1.6 and 1.7 percent.

ii. Long Term

The models predict a pattern of changes in output in the second period that is similar to that which held for the behavior of the impact on inflation. Accelerated decontrol converges toward NGPA because NGPA triggers price increases of its own in the second three years. However, the aggregate level of output under accelerated decontrol remains below that of NGPA. Moreover, when the level of output is compared to a flat price trajectory, the loss in GNP due to rising gas prices is quite large. It is 3.2 to 3.6 percent in the aggregate or about .6 percent per year.

The longer term behavior of output is similar to that of inflation. The decontrol and NGPA paths continue to converge in the third three year period. However, note that they converge less rapidly. That is, the negative impact on GNP lingers longer and is larger than the inflationary impact. For example, by the third period between eight and nine tenths of the inflationary impact had worked its way out of the economy. That is, for partial decontrol, +.3 percentage points remain in the third period out of a +2.7 percentage point impact in the first three years. For full decontrol, +.4 out of +2.2 percentage points for full decontrol. For GNP, less of the impact has been mitigated. Only between three-tenths and six-tenths of the impact has worked its way out of the economy by the third three year period (-.3 percent remains in the third period out of -1.35 percent in the first period for partial decontrol and -.9 out of -1.3 percent for full decontrol).

c. Unemployment

Table 7 presents the estimates of the increase in unemployment that will result from accelerated decontrol. These are the most consistent of the three impacts reviewed here. The range of estimates is the narrowest by far.

i. Short Term

In the short term (3 years) accelerated decontrol reasulting in a 100 percent price increase is estimated to increase the rate of unemployment by .5 percentage points -- or .17 percent per year. The range is from .3 to .7 percentage points in the partial decontrol analyses and .3 to .9 percentage points for the full decontrol analyses. If the estimate is adjusted to a flat base, the overall

Table 7

ESTIMATION OF THE IMPACT OF NATURAL GAS DECONTROL ON UNEMPLOYMENT

(Measured by Changes in the Unemployment Rate)

	Price Changes (in %)		Change in Unemployment (Percentage points)			Change in Unemployment Standardized Basis (per 100% price Increase)		
	3 yr	5 yr	3 yr	6 yr	9 yr	3 yr	6 yr	9 yr
Partial Decontrol								
Wharton	228	236	+1.1	+ .6	+ .4	+ .5	+ .3	+ .2
DOE 1/DRI Partial	103	160	+ .7	+ .2	+ .2	+ .7	+ .1	+ .1
DOE 2/DRI	68	124	+ .3	+ .4	+ .3	+ .4	+ .3	+ .2
Average						+ .5	+ .2	+ .2
Adjusted to Flat Base						+ .6	+1.1	+ .2
Full Decontrol								
DOE 1/DRI	165	217	+1.5	+ .8	+ .7	+ .9	+ .4	+ .3
DOE 2/DRI (unmodified)	112	130	+ .5	+ .3	+ .3	+ .4	+ .2	+ .2
DOE 2/DRI (modified)	112	130	+ .5	+ .3	+ .3	+ .4	+ .2	+ .2
DOE 2/Wharton (modified)	112	130	+ .3	- .1	0	+ .3	- .1	0
Average						+ .5	+ .2	+ .2
Adjusted to Flat Base						+ .6	+1.1	+ .2

Source: See Table 5.

increase in unemployment would be about .6 percentage points, or about +.2 percentage points per year.

ii. Longer Term

In the longer run, the pattern of convergence between NGPA and decontrol is observed again. The unemployment associated with accelerated decontrol is +.2 percentage points in the second three year period and +.2 percentage points in the third three year period. As was the case for the loss of output, a large part of the initial negative impact (four-tenths) remains through the third period. Adjusted to a flat base, the impact is a sustained +.2 percent per year for the first six years.

d. Conclusion

i. Long Term

Any conclusion about the macroeconomic effects of natural gas decontrol should begin with an observation about the longer term impacts. We have remarked that the specific impact of accelerated decontrol "declines" relative to the NGPA base in the longer term because NGPA embodies larger price increases of its own. This observation may be seriously misleading if not kept in proper perspective. Above all, the large and significant impact of rising gas prices stemming from NGPA itself must not be overlooked.

Compared to a base case of constant real gas prices, accelerated decontrol produces a constant pattern of negative economic impacts over all of the six years for which analysis is available. It would certainly produce this pattern for more than a decade.

As Table 8 shows, the inflationary impacts are very sharp in the first three years and then decline in the second three years. From a level of 1.1 percentage points per year, inflationary impacts would drop to .4 percentage points spread over six years. However, the GNP and unemployment impacts do not decline in the second three years. One can expect GNP to be reduced by about .6 percent each year for the first six years, while unemployment will be increased by .2 percentage points per year. These are impacts per 100 percent price increase. The actual price increases are likely to be larger. The average three year increase projected by the studies reviewed above would be close to 130 percent and the five year increase would be close to 175 percent.

Thus, an excessive concern with the isolation of the specific impact of accelerated decontrol may lead to a misunderstanding of the underlying issue of the overall impact of rising energy prices on the economy. Rising natural gas prices on an accelerated path will lead to sustained negative impacts that will affect the economy for the next decade in much the same fashion as the oil price shock of the past decade. For the first six years, the rate

Table 8

THE AVERAGE ANNUAL IMPACT OF RISING NATURAL GAS PRICES CALCULATED AGAINST A FLAT BASE

	First 3 Years	First 6 Years
Inflation		
Partial	+1.1	+ .4
Full	+ .9	+ .4
GNP		
Partial	- .6	- .5
Full	- .5	- .6
Unemployment		
Partial	+ .2	+ .2
Full	+ .2	+ .2

Source: Calculated from Tables 5-7.

of inflation would be raised by +.7 percentage points per year, GNP would be decreased by more than 1 percent per year and unemployment would be increased by .35 percentage points per year.

This observation suggests that the real focus of the analysis of accelerated decontrol should be on the short term. That is, DOE has recently concluded that the short term impacts of accelerated decontrol are bad but that the long term impacts are only slightly worse than NGPA. What this is really saying is that the long term economic future will be dimmed by rising gas prices due to NGPA and that accelerated decontrol, if it is pushed through, will dim the near term economic future as well. In other words, after 1985, NGPA will depress the economy. The real issue is whether the impact will be started earlier by accelerating decontrol and increased by extending decontrol to more categories of natural gas.

ii. Short Term

Turning to the short run, Table 9 presents a number of perspectives on the estimates of the impact of decontrol of gas prices. The analysis focuses on accelerated decontrol, as opposed to immediate, full decontrol. The mean estimate and the range of estimates for the accelerated decontrol analyses are shown. In addition, the mean for full decontrol analyses is shown. Finally, an estimate

Table 9

ESTIMATES OF THE SHORT RUN IMPACT OF ACCELERATED DECONTROL

	Phased Decontrol Analysis			Mean of Full Decontrol Analysis	Adjusted Mean of Oil Analysis
	Mean	Low	High		
Inflation (percentage points)	+2.7	+2.1	+3.4	+2.2	+2
Output (percent)	-1.35	- .9	-2.4	-1.3	-1.27
Unemployment (percentage pts)	+ .5	+ .3	+ .9	+ .5	.6

Source: Calculated from Tables 5-7 and Appendix B.

based on the earlier oil analysis is presented. The calculation of the estimate derived from the oil analysis is described in Appendix B.

In the short term, the mean of the partial decontrol estimates is well within the limits of all the other estimates. Further, the range is quite narrow. Thus, if one chooses the mean, the series of analyses lead to estimates in which one can have considerable confidence.

Having settled on a basic impact estimate -- i.e., impact per 100 percent price increase -- we must next settle on the size of the expected price increase. That is, all of the analysis in this section is based on a 100 percent price increase over the first three years. In an earlier report, CECA/RF has estimated that a three year phased decontrol would lead to a 133 percent price increase.[32] In addition, it turns out that this is the mean of the estimates contained in the analyses reviewed above. Thus, the standard impacts estimated above should be scaled up by a factor of 1.33.

The resulting estimate for the short term would be an increase of 3.6 percentage points in the GNP deflator, a decrease of 1.9 percent in GNP and an increase of .7 percentage points in unemployment. Furthermore, based on the earlier estimates we can project that the impact on the CPI will be 1.5 times as great as the impact on the GNP deflator. Therefore, the CPI would increase by about 5.4

percentage points. These are three year impacts, so that the average annual impact would be as follows:

GNP Deflator	+1.2 percentage points
CPI	+1.8 percentage points
Unemployment	+ .2 percentage points
GNP	- .6 percent

Given what we have noted above with respect to the overall impact of gas prices, we would expect the unemployment and GNP impacts to continue at about the same level for the mid-term at least. The inflationary impact would recede in the second three year period.

FOOTNOTES

[1] Basic, technical discussions of the impact of energy prices can be found in the following articles: R.J. Gordon, "Alternative Responses of Policy to External Supply Shocks," Brookings Papers on Economic Activity 1 (Washington, DC: The Brookings Institute, 1975); E. Phelps, "Commodity Supply Shocks and Full Employment Monetary Policy," Journal of Money Credit and Banking 10, No. 2 (1978); William Nordhaus, "Oil and Economic Performance in Industrial Countries," Brookings Papers on Economic Activity 2 (1980). Somewhat more accessible discussions can be found in Robert S. Dohner, "Energy Prices, Economic Activity and Inflation; a Summary of Issues and Results," in Energy Prices, Inflation and Economic Activity, K. Mork, ed. (Cambridge: MIT Press, 1981); Robert S. Gordon, "Postwar Macroeconomics: The Evolution of Events and Ideas," in The American Economy in Transition, ed. Martin Feldstein (Chicago: Chicago University Press, 1981).

[2] The benefits of accommodative responses have been noted by Gordon, Phelps, op. cit., as well as E. Gramlich, "Macro Policy Responses to Price Shocks," Brookings Papers on Economic Activity 1 (Washington, DC: The Brookings Institute, 1979); K. Mork and R. Hall, "Macroeconomic Analysis of Energy Price Shocks and Offsetting Policies; an Integrated Approach," in K. Mork, Energy Prices.

[3] U.S. Department of Energy (Macroeconomic Consequences of Natural Gas Decontrol [Washington, DC: Government Printing Office, 1981], p. 23) notes interest rates explicity as do Thurman and Berner, "Analysis of Oil Price Shocks in the MPS Model," in K. Mork, Energy Prices.

[4] Empirically, estimates typically vary by a factor of two in the magnitude of projected impacts. Nordhaus, ("Oil and Economic Performance," p. 346) states that the impact may last from one to four decades for the long run.

[5] The impact of rising energy prices on productivity has received considerable attention. Discussion of specific aspects of this impact by those who estimate small impacts can be found in George L. Perry, "Potential Output: Recent Issues and Present Trends," Brookings Reprint 336 (Washington, DC: The Brookings Institute, 1978); E. Denison, "Explanations of Declining Productivity Growth," Survey of Current Business 59 (1979); William Fellner, "The Declining Growth of American Productivity: An Introductory Note," in Nordhaus, ed. Contemporary Economic Problems (1979).

Those who estimate the impact of rising energy prices to be large include R. Rasche and J. Tatom, "Energy Prices and Potential GNP" and "The Effects of the New Energy Regime and Economic Capacity, Production and Prices," Federal Reserve Bank of St. Louis Review (1977); Dale W. Jorgenson, "Energy Prices and Productivity Growth," Data Resources Inc. (1979); E.A. Hudson and D.W. Jorgenson, "Energy Prices and the U.S. Economy 1972-1976," Natural Resources Journal 18 (1978); J. Tatom, "Energy Prices and Capital Formation" and "The Productivity Problem," Federal Reserve Bank of St. Louis Review (1979); Martin Neil Baily, "Productivity and the Services of Capital and Labor," Brookings Paper on Economic Activity 1 (1981).

[6] There is little disagreement on the conceptual causes of declining productivity. Rather, the disagreement centers on the elasticity of substitution between energy and other factors of production which leads to disagreement about how big the impact is and how long it lasts. An interesting exercise to demonstate the striking difference in the impact on GNP depending on the assumptions made about the elasticity of substitution has been conducted by W. Hogan and Alan Manne, "Energy-Economic Interactions: The Fable of 'The Elephant and the Rabbit'," in Advances in the Economics of Energy and Resources: The Structure of Energy Markets, Volume I, ed. Robert S. Pinlyck (Connecticut: JAI, 1979).

[7] Kenneth Arrow and Joseph Kalt (Petroleum Price Regulation: Should We Decontrol? [Washington, DC: American Enterprise Institute, 1979]) establish an analytic framework for studying efficiency gains. Glenn C. Loury (An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices [Washington, DC: Natural Gas Supply Association, April 1981]) applies the argument to natural gas, as does DOE, Two-Market Analysis of Natural Gas Decontrol (Washington, DC: Government Printing Office, November 1981). Rodney T. Smith ("In Search of 'Just' U.S. Oil Policy: A Review of Arrow, Kalt and More," Journal of Business 54 [1981]: 11) takes the Arrow/Kalt approach but reaches rather different conclusions than they did about the most equitable policy.

[8] Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, United States House of Representatives, The Energy Inflation Crisis: Sources, Consequences and Policy Options (Washington, DC: Goverment Printing Office, December 1980), p. 13.

[9] DOE, The Interrelationship of Energy and the Economy: A Supplement to the National Energy Policy Plan (Washington, DC: Government Printing Office, July 1981).

[10] Ibid.

[11] Idid., p. 23. See also, Otto Eckstein, "Shock Inflation, Core Inflation and Energy Disturbances" in E. Mork, ed., Energy Prices, pp. 78-79.

[12] DOE, *The Interrelationship*, p. 24; Eckstein, "Shock Inflation," pp. 78-79.

[13] See Denison, "Explanations;" Tatom, *Energy Prices* and Baily, "Productivity."

[14] See DOE, *The Interrelationship*, pp. 21-23 and Eckstein, "Shock Inflation," pp. 78-79.

[15] DOE, *The Interrelationship*, p. 19 and Eckstein, "Shock Inflation," pp. 78-79.

[16] DOE, *The Interrelationship*, p. 6 and Nordhaus, "Oil and Economic Performance," p. 370.

[17] U.S. Executive Office, *Economic Report of the President, 1981* (Washington, DC: Government Printing Office, January 1981), p. 51.

[18] Ibid., p. 190. Similarly, Mork and Hall, *Macroeconomic Analysis*, show that accommodative policies can easily absorb half of the macroeconomic impact of the price shock.

[19] Otto Eckstein (*The Great Recession: With a Postscript on Stagflation* [New York: North Holland, 1978], p. 5) has called econometric modeling "an exercise in contemporary cliometrics." Cliometrics can be defined as the study of economic history through the construction of quantitative, contrafactual scenarios which test the causal importance of specific historical facts. For example, *if* there had been no energy price increase in 1979-80, what would the course of economic activity have been. Cliometrics, as an approach to economic history, has been the subject of considerable controversy. One of the most important controversies centers on the specification of the counterfact to be tested. If one specifies the incorrect counterfact, the analysis loses its logical basis (see, for example, Stefano Fenoalta, "The Discipline and Theory: Notes on Contrafactual Methodology and the New Economic History," *Journal of European Economic History*, 2:3. In this case, the failure to take account of monetary policy may be a misspecification of the counterfact if energy prices and restrictive monetary policy are inseparable.

[20] Eckstein, *The Great Recession*, Chapter 9 and DOE, *The Interrelationship*, Tables 2 and 3.

[21] DOE, *The Interrelationship*, Tables 2 and 3.

[22] Ibid.

[23] Ibid., pp. 19-22.

[24] The Consumer Energy Council of America Research Foundation, *Crude Oil Price Decontrol and the Poor: A Social Policy Failure*, prepared for the Subcommittee on Investment, Jobs and Prices of the Joint Economic Committee, February 1982, Table II-4.

[25] Consumer Energy Council of America Research Foundation, *Past as Prologue I: The Underestimation of Price Increases in the Decontrol Debate: A Comparison of Oil and Natural Gas* (Washington, DC, February 1982).

[26] This assertion is derived by taking a weighted average of the elasticities of natural gas in its two primary end use categories -- residential and industrial -- and comparing it to the weighted average of the elasticities of oil in its three primary end use categories -- residential, industrial and transportation. The data are taken from Lester D. Taylor, "The Demand for Energy: A Survey of Price and Income Elasticities," in William D. Nordhaus, ed., *International Studies of the Demand for Energy* (New York: North Holland, 1977) and Robert S. Pindyck, *The Structure of World Energy Demand* (Cambridge: MIT Press, 1979). The only two sources that estimated the elaslticities for the full range of uses of each fuel yield the results contained in the following table, which leads to the conclusion that the aggregate elasticities of oil and natural gas are roughly equal. Other studies show essentially the same relationship between the two fuels, but they do not cover the full range of end-uses of each of the fuels.

	Federal Energy Administration[a]	Pyndick[b]
OIL		
Residential	- .07	-1.10 to 1.38
Industrial	-1.01	-1.03 to -1.117
Private Gasoline	- .49	-1.03
GAS		
Residential	-1.26	-1.28 to -2.09
Industrial	- .58	- .41 to - .67
Average		
Oil	- .70	-1.06
Gas	- .85	- 1.09

[a] Federal Energy Administration, *National Energy Outlook: 1976* (February 1976), as described in Taylor, pp. 21, 24, 32.

[b] Pyndick, pp. 16, 222, 241.

[27] Data from the American Petroleum Institute (Market Shares and Individual Company Data, 1950-1979, October 30, 1980) shows that the 16 largest owners of crude oil reserves possess 67 percent of all domestic reserves. The same 16 companies own 50 percent of all domestic gas reserves. As for the closeness of technology, we need only note that industry sources treat oil and gas drilling as virtually identical when they discuss the allocation of rigs between the two fuels. As for the geographic concentration of production, we can note that five states (Oklahoma, Texas, Louisiana, New Mexico and California) accounted for 64 percent of all domestic oil production in 1980 and 82 percent of all gas production in 1979. These states constitute less than 20 percent of the total area of the U.S.

[28] The modifications entail (1) adjusting potential GNP upward in the DRI model to reflect DOE's assumption of reduced real resource costs in acquiring the same quantity of gas (see page __ above) and (2) altering the input/output matrix in the Wharton model to allow for increased consumption of natural gas in the industrial sector when decontrol occurs, reflecting DOE's argument that industrial users were held below their optimum consumption of gas by curtailments and other restrictions (Fuel Use Act).

[29] See Consumer Energy Council of America Research Foundation, Natural Gas Price Deregulation: A Case of Trickle-Up Economics for a full description of one of the major differences.

[30] DOE, Two Market Analysis of Natural Gas Decontrol (November 1981) Attachment IV.

Appendix A

THEORETICAL EFFICIENCY GAINS AND LOSSES FROM DECONTROLLING ENERGY PRICES

A. Introduction.

Since early 1979, the discussion of the decontrol of energy prices has become increasingly rigorous and theoretical. A number of authors have attempted to conceptualize the potential benefits and costs of decontrol.[1] Unfortunately, the conceptualizations are frequently difficult to reconcile. Some authors address only certain potential benefits, others address only certain costs. Some only analyze the energy sector. Others address only non-energy sectors.

Amid this confusion, the misconception has been created that decontrol, of necessity, leads to efficiency gains in the economy. In fact, that is not the case. Although there is a high likelihood that there will be some efficiency gains in the domestic energy sector, and some possibility that there will be resource gains in the international sector, there is also a very high likelihood that there will be resource and efficiency losses in domestic non-energy sectors. Theory is completely silent on whether the gains will be larger than the losses.

The ultimate impact of decontrol depends on a number of empirical, not theoretical, issues. What is the magnitude of the price elasticity of supply and demand for energy?

What is the elasticity of substitution between energy and other inputs (factors of production)? The bulk of the empirical evidence suggests that the bottom line impact on efficiency is negative, not positive. Thus, the belief that decontrol leads to efficiency gains in the economy is not only theoretically unfounded, it appears to be empirically incorrect as well.

Several of these issues have been addressed in earlier studies conducted by the Consumer Energy Council of America Research Foundation.[2] In this Appendix, we present a brief, preliminary, formal discussion of the subject. The objective is to stimulate further careful thinking about the efficiency implications of decontrol and, thereby, to clear up some of the confusion.

B. Efficiency Gains in the Energy Sector

1. Arrow/Kalt: Markets at Equilibrium with Inefficiencies

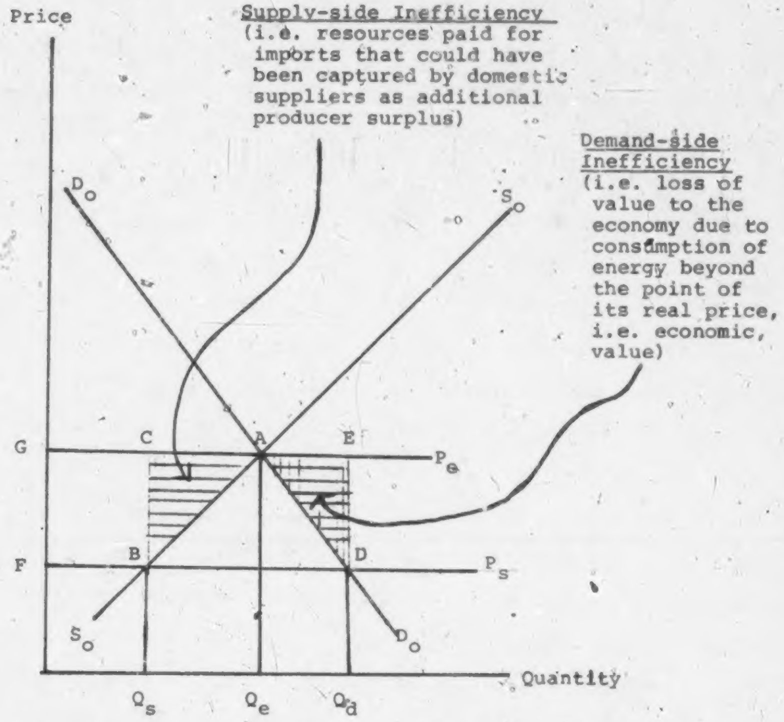
The basic lines of discussion of efficiency gains seem to have been laid down by Arrow and Kalt. They identified two potential gains from decontrol. According to their argument, controlled or subsidized prices lead suppliers to produce less and consumers to demand more energy than they would at decontrolled prices. Two types of inefficiency resulting from controls and, therefore, two potential efficiency gains from decontrol can be identified. Throughout the analysis we use the terms inefficiency (due to controls) and efficiency gains (potentially achievable with decontrol) interchangably.

Supply side inefficiency is defined as the difference between the price we pay (P_w) for supplies of energy in excess of the quantity of energy (Q_s) domestic suppliers are willing to produce at the controlled price (P_s) and the domestic resources that would have been utilized domestically to produce that energy (see Figure A.1). This is the area contained in triangle ABC. That is, the price we pay for energy is a world price, but the marginal cost of domestically produced energy is defined by the supply curve (S_oS_o). The difference is a potential efficiency gain. We can decrease the import bill and hold the resources in the domestic economy by allowing the price to rise to the world level. This shift of resources is tantamount to an increase in domestic producer surplus (as classically defined).[3] Consumer surplus is unaffected.

Demand side inefficiency is defined as the difference between the price actually paid for energy and the value that consumers place on energy. This is the area in triangle ADE. That is, because consumers "see" a price that is lower than the nation actually pays, they consume energy beyond that point where its utility (expressed in the demand curve [D_oD_o]) would justify that consumption at the real price. The difference between the world price of energy and its utility is a potential efficiency gain. However, note that if captured through decontrol, this efficiency gain would

FIGURE A.1

ARROW/KALT: BASIC SUPPLY AND DEMAND-SIDE POTENTIAL EFFICIENCY GAINS


Price
Supply-side Inefficiency
(i.e. resources paid for imports that could have been captured by domestic suppliers as additional producer surplus)
Demand-side Inefficiency
(i.e. loss of value to the economy due to consumption of energy beyond the point of its real price, i.e. economic, value)
D_o
S_o
G
C
A
E
P_e
F
B
D
P_s
S_o
D_o
Quantity
Q_s
Q_e
Q_d

Source: Kenneth J. Arrow and Joseph P. Kalt, Petroleum Price Regulation: Should We Decontrol? (Washington, D.C., American Enterprise Institute, 1979), pp. 9-27.

cause a decline in consumer surplus, as classically defined.[4] The loss would be equal to the area bounded by ADFG.

2. Arrow/Kalt: More Supply Side Inefficiencies

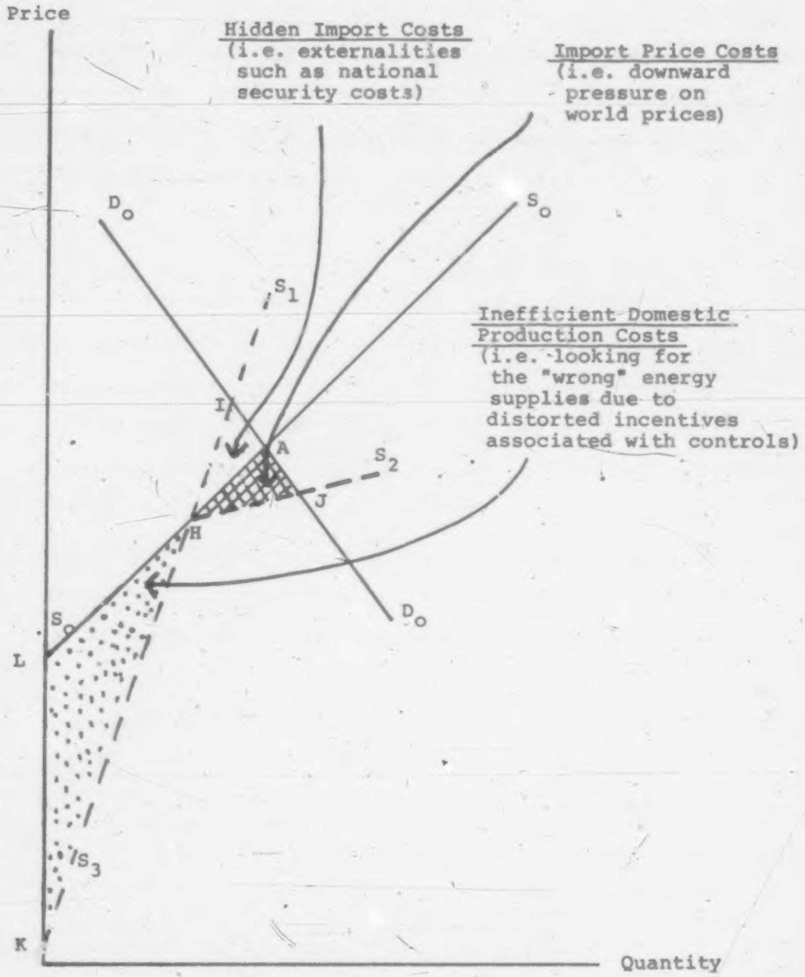
These were the basic efficiency gains that Arrow/Kalt discussed and quantified carefully. However, they also noted other potential gains (see Figure A.2). If the import price does not reflect the full social cost of imports (e.g., if there are external costs of imports such as national security costs) then the world price is "too low." The import supply curve is really defined by HS_1. The potential efficiency gains can be measured as the area of triangle AHI. This inefficiency can be called the hidden import costs.

At the same time, they note that increased domestic supplies and decreased demand could put downward pressure on the world price of energy. The import supply curve could be HS_2. The potential efficiency gains can be measured by the triangle AJH. This inefficiency can be called import price costs.

On the other hand, if domestic controls give incentives to look for energy in the wrong places (e.g., low production stripper wells or high cost deep gas), then the cost of domestic gas is higher than it should be. The domestic supply curve shifts to S_3H. The potential efficiency gains can be measured as the area of the triangle HKL. This inefficiency can be called inefficient domestic production cost.

FIGURE A.2

ARROW/KALT: ADDITIONAL SUPPLY-SIDE EFFICIENCY GAINS, HIDDEN IMPORT COSTS AND INEFFICIENT DOMESTIC PRODUCTION COSTS



Source: Kenneth J. Arrow and Joseph P. Kalt, Petroleum Price Regulation: Should We Decontrol? (Washington, D.C., American Enterprise Institute, 1979), pp. 9-27.

The administrative costs associated with controls can also be conceptualized in this way. That is, if we assume that the administrative costs of control are passed through to consumers , they appear as an "artificially" high supply curve.

With decontrol, the hidden import costs and import price costs would be registered as consumer surplus gains, if they were captured. The inefficient domestic production costs would be registered as increases in producer surplus.

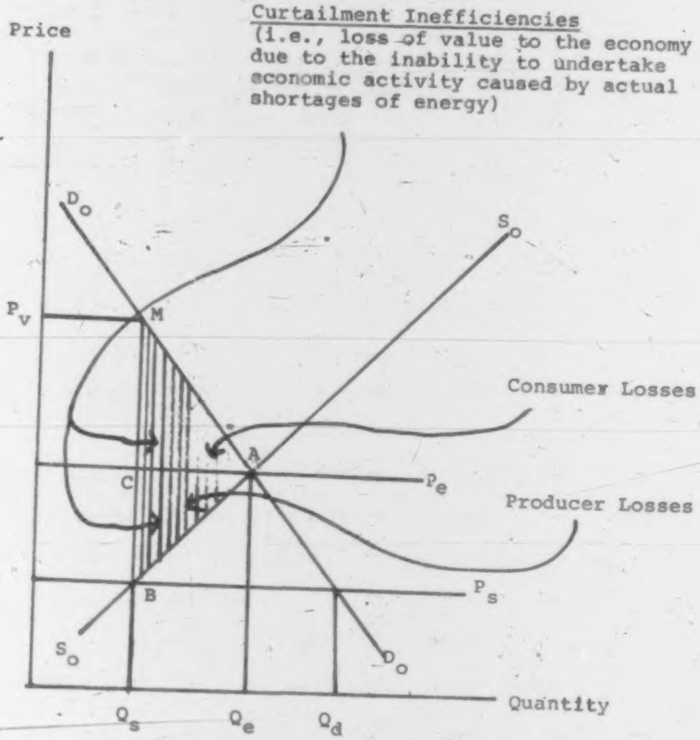
2. Loury: Shortages

From this base, a number of additions and modifications have been made. Note that Arrow and Kalt assume that the market clears by increasing imports. They measure gains primarily by avoided import costs.. However, what if the market doesn't clear? What if some consumers are actually denied energy? Loury has taken a step toward dealing with this situation (see Figure A.3). He argues that if there is a physical shortage, the value of the loss to the economy is equal to the value of consumption (i.e., the height of the demand curve D_oD_o) minus the cost of producing the energy (the height of the supply curve S_oS_o). This area is given by the triangle ABM. Loury argues as follows:

> As may be seen in the Figure, the ceiling price control-induced shortfall of production below the equilibrium level creates a situation where the value of an additional unit of gas to demanders, P_v, exceeds the cost to suppliers of producing another unit, P_s. The difference $P_v - P_s$ is thus the potential net gain from another unit of production beyond Q_s. As production is further expanded beyond

FIGURE A.3

LOURY: POTENTIAL CURTAILMENT EFFICIENCY GAINS


Curtailment Inefficiencies
(i.e., loss of value to the economy due to the inability to undertake economic activity caused by actual shortages of energy)
Price
D_o
S_o
P_v
M
Consumer Losses
A
C
P_e
Producer Losses
B
P_s
S_o
D_o
Quantity
Q_s
Q_e
Q_d

Source: Glenn C. Loury, An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices (Natural Gas Supply Association, April, 1981), p. 2.

> Q_s, the marginal cost of additional supplies rises, and the marginal value of additional units consumed falls. These marginal values are equalized at the market clearing quantity Q_e. The shaded area in the Figure thus represents the net efficiency cost of price controls because, for each unit of production in excess of Qs, the height of the demand curve represents the value of benefits from consuming that unit while the height of the supply curve represents the cost of producing that unit. The difference is thus the net social gain from having that unit available. The shaded triangular area then depicts the sum of net social gains foregone by virtue of the shortfall of production from Q_e to Q_s. It therefore also represents the efficiency benefits which could be enjoyed if controls were removed.

We can call this curtailment inefficiency.

With decontrol, those gains captured in the area between the world price and the demand curve (ACM) would be realized as gains in consumer surplus. They are measured as the utility (surplus) lost by consumers who are constrained from using resources up to their optimum quantity Q_e.

The gains between the world price and the supply curve (ABC) would be registered as increases in producer surplus. They can be defined roughly as in the Arrow/Kalt scheme. That is, they are the value (surplus) that producers could realize if prices were allowed to rise to P_w.

Unfortunately, the remainder of Loury's analysis becomes confused. Having talked of actual physical shortages, he then talks of import reductions (the Arrow/Kalt point). But if one has shortages, how are imports to be reduced? Additions to supply will fill unsatisfied demand, not displace imports. Only if oil is not a substitute for some uses of gas can there be both curtailment efficiency gains and import reductions. If that is the case, one must be extremely careful in counting efficiency gains. If one counts the full Arrow/Kalt efficiency gains and the full Loury efficiency gains, then one must be double counting some gains. That is, the inefficiency attributable to physical shortage, and the inefficiency attributable to imports, are mutually exclusive.

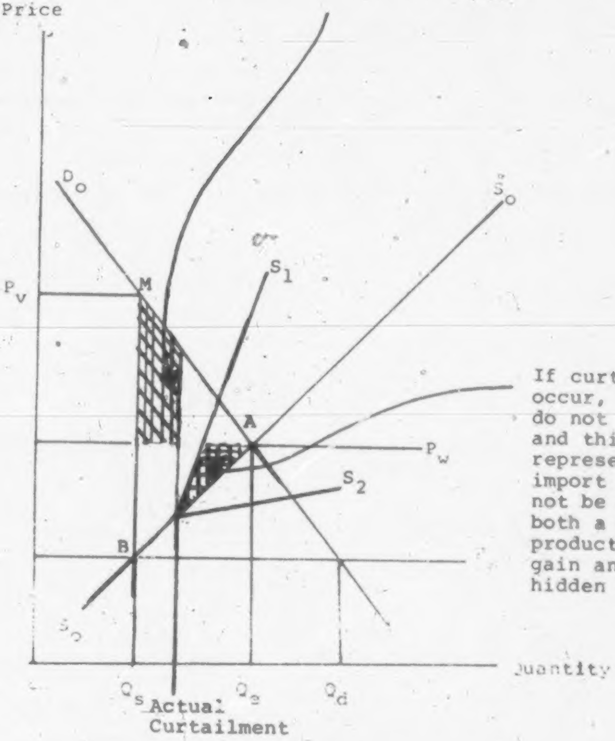
Loury's calculations of efficiency gains are problematic and ambigious on this point (see Figure A.4). He counts the full curtailment gains first. However, the curtailments he calculates are about 2 TCF. This is far above actual curtailments in 1980. Thus, his theoretical argument does not fit reality. That is, he conceptualizes and measures the area of ABM, but, in reality, physical shortages were not that large.

What is more, Loury then counts import reduction gains. However, he values these only at their premium above the world price of oil. The premium he puts on the import savings is quite high, $10 per barrel. If the $10/barrel figure is intended strictly as an avoided import price cost, then no double counting has occurred. However, $10/barrel is a very high reduction in import prices to predict and Loury's discussion suggests that the premium he has in mind is both a hidden import cost saving and an import price saving. If that is the case, then there is some double counting. You can't have both a hidden import cost gain and a curtailment efficiency gain of the magnitude Loury calculates. If there are curtailments of the order of magnitude he estimates, there will be much smaller import reductions.

FIGURE A.4

LOURY: AMBIGUITIES IN CALCULATING EFFICIENCY GAINS

If curtailments do not actually occur, then this area is not a potential efficiency gain.


Price
D
o
S
o
S
1
P
v
M
A
P
w
S
2
B
S
o
Quantity
Q
s
Actual Curtailment
Q
e
Q
d

If curtailments do occur, then imports do not close the gap and this area, representing hidden import costs, must not be counted as both a domestic production efficiency gain and an avoided hidden import cost.

Source: Glenn C. Loury, An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices (Natural Gas Supply Association, April, 1981), pp. 2-10.

The ambiguity is of potentially large significance. The import-related efficiency gains in Loury's analysis are by far the most important. If import price savings are only half the import gains Loury had in mind, then almost one-quarter of the total gains Loury estimated are a result of double counting.

Loury could calculate all Arrow/Kalt gains first and then add some curtailment gains, but it seems clear that the total gains would be much smaller than he originally estimated.

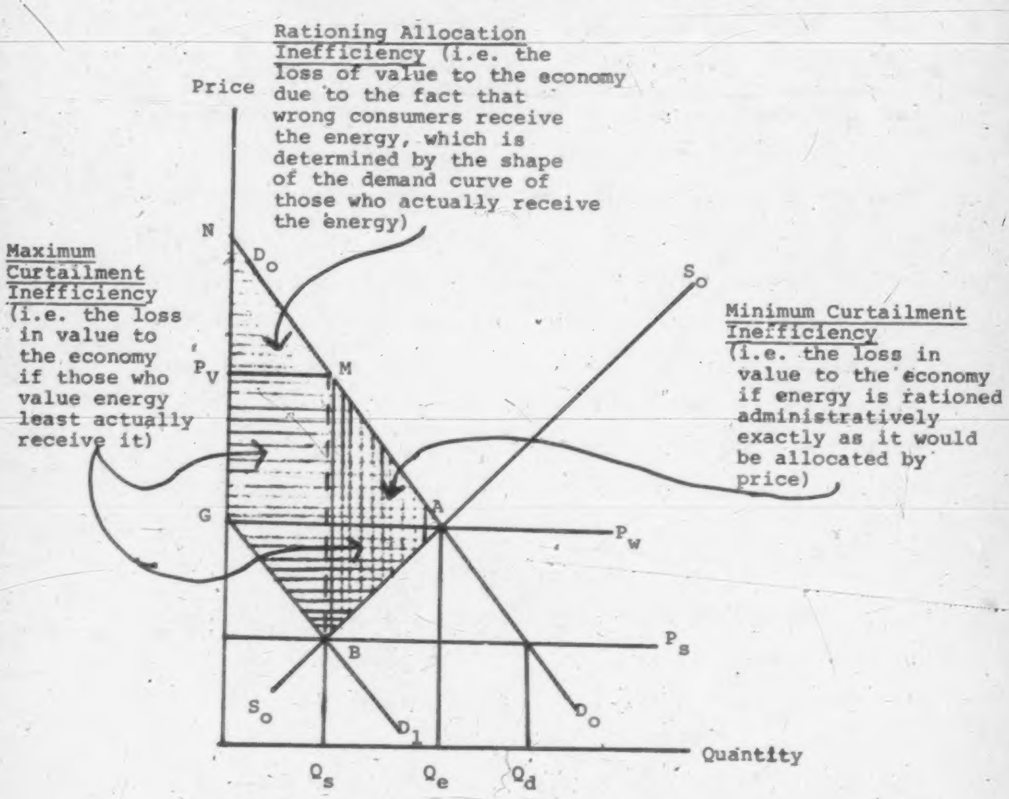
Finally, Loury mentions the fact that, where curtailments actually occur and supply is rationed administratively, there is no guarantee that those who value gas most will have access to it. Therefore there are potentially more inefficiencies in a market in which shortages exist. However, he does not conceptualize this effect.

3. Felmy: Shortages with Misallocation

Felmy follows Loury's approach, but avoids his error. He also conceptualizes the rationing effects about which Loury mused (see Figure A.5). Again, efficiency gains are measured as the difference between the cost of production and the value of consumption -- the area between the supply and demand curves, triangle ABM. Felmy calls this the minimum efficiency gain (we call it minimum curtailment inefficiency). Felmy goes on to conceptualize the potential rationing inefficiency of curtailments. Suppose that those who have access to gas under the rationing scheme are those who value it least. Their demand curve would be given by D_1D_1, not D_oD_o and the value of the

FIGURE A.5

FELMY: POTENTIAL RATIONING ALLOCATION EFFICIENCY GAINS



Rationing Allocation Inefficiency (i.e. the loss of value to the economy due to the fact that wrong consumers receive the energy, which is determined by the shape of the demand curve of those who actually receive the energy)

Maximum Curtailment Inefficiency (i.e. the loss in value to the economy if those who value energy least actually receive it)

Minimum Curtailment Inefficiency (i.e. the loss in value to the economy if energy is rationed administratively exactly as it would be allocated by price)

Source: John Felmy, The Economic Efficiency Gains of Accelerated Natural Gas Price Decontrol - A Micro-Macro Linked Approach (ICF Incorporated, submitted to the U.S. Department of Energy, Office of Policy, Planning and Analysis, Division of Energy Deregulation, December, 1981) consumption lost would be given by ABGN. He calls this the maximum efficiency gain (we call it maximum curtailment inefficiency).

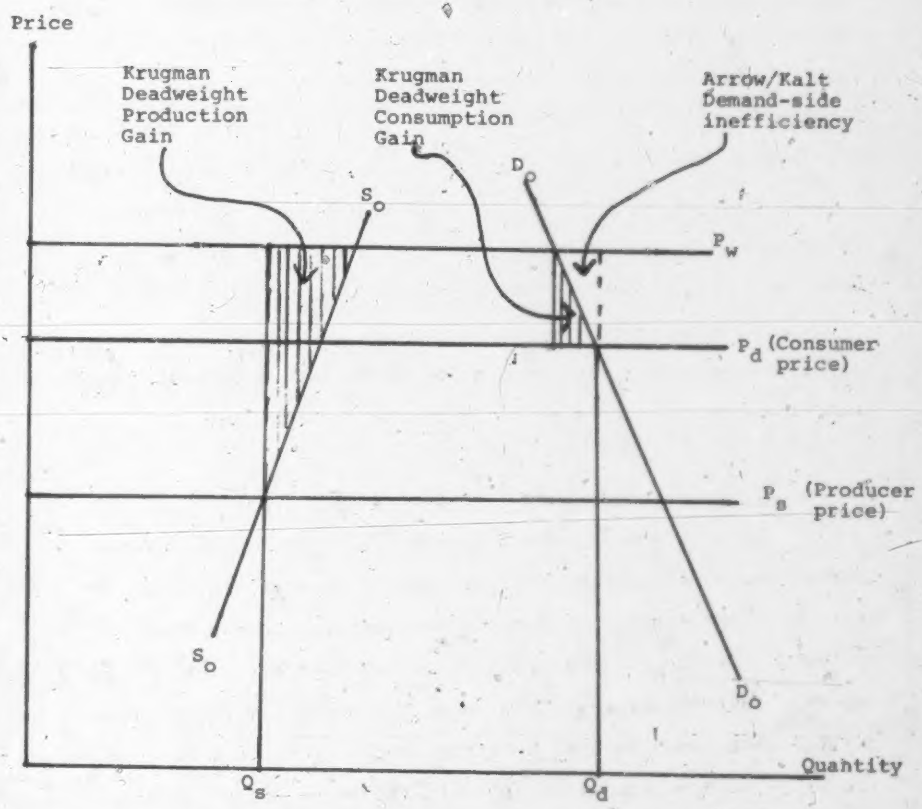
Rationing allocation inefficiency (and therefore the potential efficiency gains) would be the difference between the loss in output due to curtailments, if curtailments were allocated efficiently and the loss if they are not allocated efficiently. This is the area bounded by MBGN. This gain would be registered as an increase in consumer surplus. The area is determined by the shape and location of the demand curve of those who actually have access to gas.

Felmy does not make it absolutely clear that physical shortages must occur for these gains to be relevant, even though he does not make Loury's error of double counting gains.

4. Krugman: Additional Clarifications

Krugman, who follows Arrow/Kalt closely, makes changes in the conceptualizations that are useful (see Figure A.6). To begin with, he assumes that the domestic supply and demand curves do not cross. That is, the market does not clear in domestic energy sources. This concept was only implicit in the earlier analysis. Second, he introduces a difference betwee the price paid to suppliers (P_s) and the price which consumers see (P_d). This is applicable to the natural gas market. Third, he measures the Arrow/Kalt demand side inefficiency, which he calls the deadweight consumption loss, below the demand curve,

FIGURE A.6
KRUGMAN: REFINING ARROW/KALT


Price
Krugman Deadweight Production Gain
Krugman Deadweight Consumption Gain
Arrow/Kalt Demand-side inefficiency
S_o
D_o
P_w
P_d (Consumer price)
P_s (Producer price)
S_o
D_o
Quantity
Q_s
Q_d

Source: Paul Krugman, Real Exchange Rate Adjustment and The Welfare Effects of Oil Price Decontrol (MIT, Energy Laboratory, Discussion Paper No. 1, May 1981), p. 3.

rather than above it. This is conceptually preferable and mathematically very close to Arrow/Kalt.[5]

C. A Summary of Potential Efficiency Gains

On the basis of these conceptualizations, we can define seven different inefficiencies or potential efficiency gains (see Figure A.7). Let us briefly describe the market structure before we define the potential efficiency gains.

First, note that the market is typified by a ceiling price for producers (P_s) above the average price (P_d) that consumers see. This situation obtains in the natural gas market due to the partial decontrol of NGPA. Further, note that curtailments occur at Q_c. Inefficient administrative rationing occurs. The domestic supply ends at point H, where the import supply curve begins. To accommodate a market with both curtailments and imports, we assume that imports are oil and some consumers who can use only gas are denied access to it.

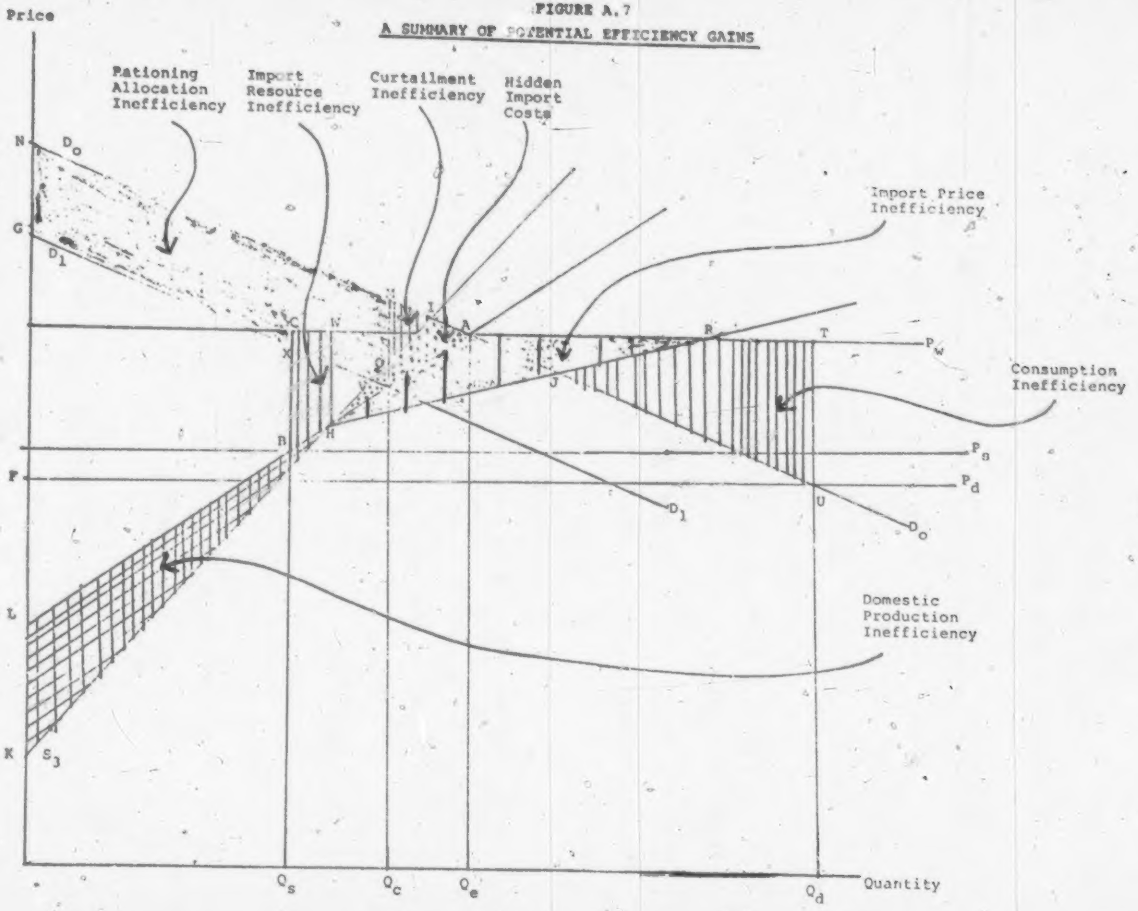
The inefficiencies and potential efficiency gains are defined as follows:

1. Rationing allocation inefficiency: Loss in value to the economy due to the fact that rationing provides gas to those who value it less, and denies gas to those who value it more (NMOVWCXG).

2. Import resource inefficiency: Resources spent on imported energy that could have been paid to domestic producers rather than foreign producers -- thereby increasing domestic producer surplus (WHBC).

FIGURE A.7

A SUMMARY OF POTENTIAL EFFICIENCY GAINS



3. Curtailment inefficiency: Loss of value due to the fact that some consumers are deprived of gas and therefore unable to undertake economic activity (MIO).

4. Hidden import costs: The value of imported energy not reflected in its price (IAH).

5. Import price inefficiency: Resources spent on imports whose price has been increased due to excess domestic demand and reduced domestic supply (ARH).

6. Consumption inefficiency: The difference between the price actually paid and the utility to the nation of the energy actually consumed (JRTU).

7. Domestic production inefficiency: Resources spent on domestic production as a result of directing production operations into less than the most economic (i.e., least cost) patterns (HKL).

In Figure A.7, for the purpose of labeling gains and measuring them, these inefficiencies are defined so that gains based on alterations in resource flows take precedence. That is, efficiencies which are savings against current imports or domestic expenditures are counted first. Price effects are given second precedence. That is, projected gains due to changes in price implicit in the supply curve are identified after changes in resources. Externalities are counted third. That is, the implicit costs of imports are identified third. Finally, "valuations" are counted last. That is, the gains due to the implicit value placed on consumption by society (implicit in the demand curve) are counted last.

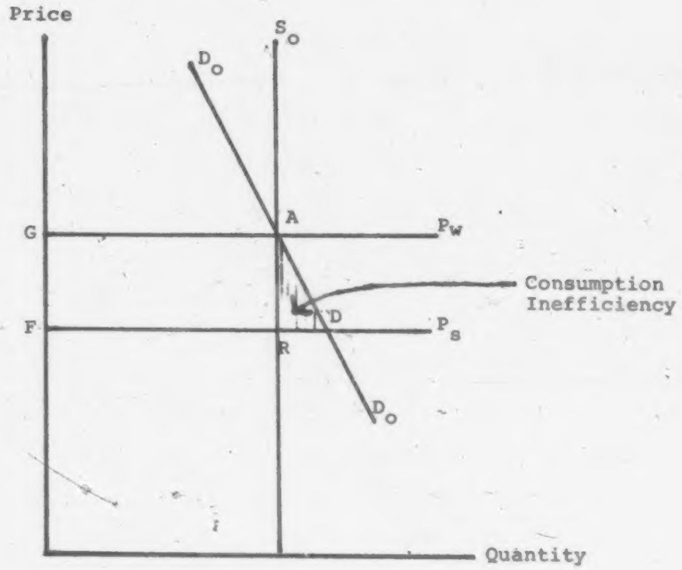
This approach is taken only because it seems to represent an ordering from the most to the least tangible effects. That is, where resources are already flowing, then it seems fairly likely that gains which rely on redirecting flows can be realized. Resources and price effects also seem to be the most easily observable and measurable. They are also much less sensitive to assumptions. Valuations are largely implicit.

Indeed, having carefully identified all of the potential efficiency gains of decontrol, it must be said that in general they are extremely sensitive to assumptions about the price elasticity of supply and demand. Above all, as the supply elasticitiy becomes small, all of the potential efficiency gains except the consumption gains approach zero (see Figure A.8). Under the assumption of very low supply price elasticity, there is very little gain from decontrol. Moreover, there are very large transfers of wealth within the domestic economy. That is, consumer surplus is reduced dramatically (the area bounded by ADFG) while efficiency is increased slightly (the area bounded by ADR).

As several other analyses conducted by CECA/RF have shown, the elasticity of supply in the gas market is extremely

FIGURE A.8

CECA's REPRESENTATION OF EFFICIENCY GAINS RESULTING FROM AN INELASTIC SUPPLY CURVE


Price
S_o
D_o
A
G
P_w
Consumption Inefficiency
D
F
P_s
R
D_o
Quantity

low so that efficiency gains are likely to be small.[6] The market looks more like Figure A.8 than A.7. In fact, in DOE's recent analysis, the total efficiency gains were only one-third as large as the loss in consumer surplus.

D. Efficiency Losses

However, let us assume that some quantity of real resources can be gained in the energy sector through decontrol. We next must ask what the cost of those gains will be in the non-energy sectors. That is, decontrol dramatically raises the cost of a critical input into the production process and it is certainly reasonable to ask whether or not such a change leads to losses in production efficiency.[7]

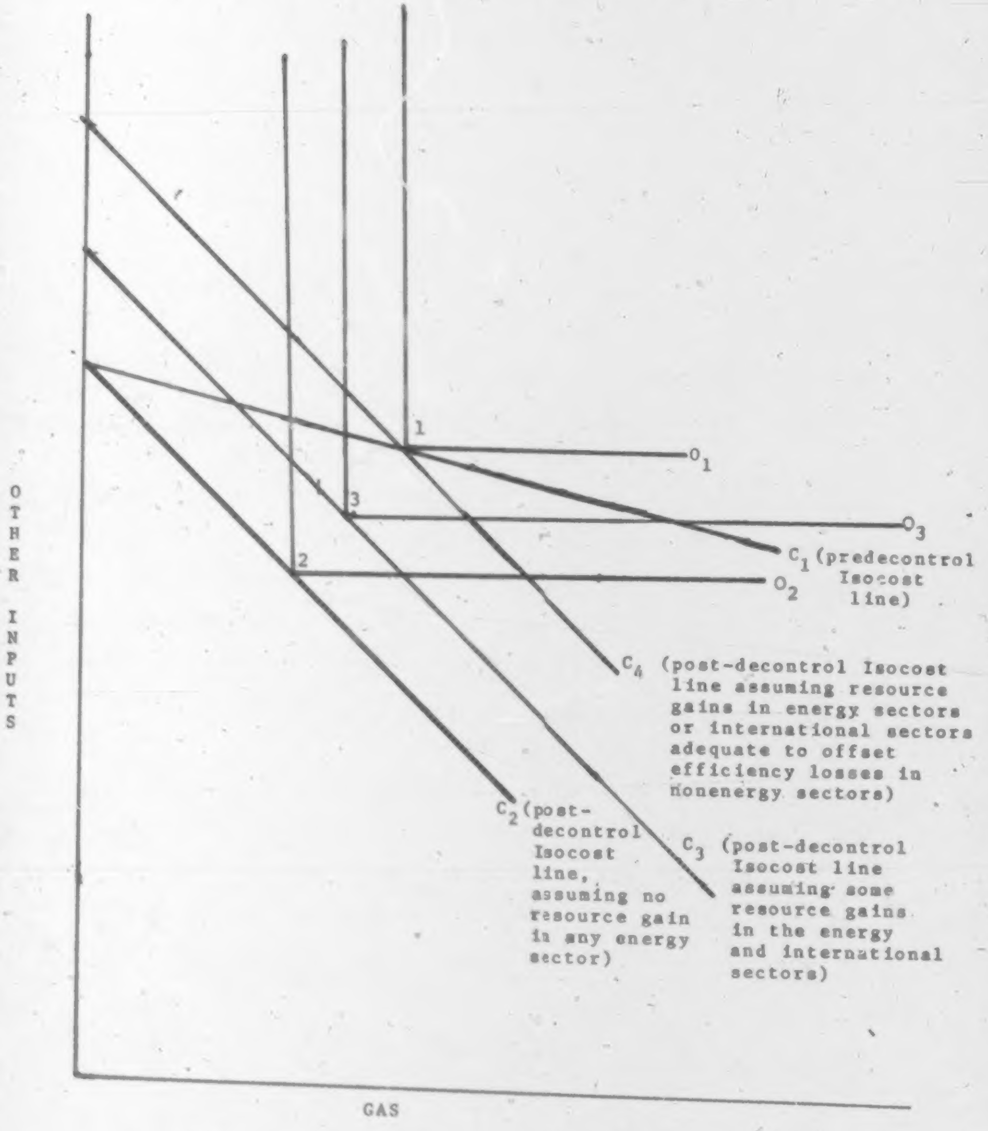
In fact, the empirical evidence suggests that in both the short and long term, there are losses in efficiency in the general economy. Conceputally, those losses in productivity and output can be explained with reference to a production function (see Figure A.9). If the elasticity of substitution between energy (gas) and other inputs is low, then a rise in prices forces the economy down to a lower level of output. Figure A.9 uses production functions with zero elasticities of substitution to make this point.[8]

Prior to decontrol, production is at point 1, on production function (isoquant) 0_1. An increase in gas prices shifts the isocost line from C_1 to C_2. That is, the price of gas increases relative to other inputs. Because there is no

FIGURE A.9

A REPRESENTATION OF EFFICIENCY LOSSES IN NONENERGY SECTORS

with Zero Elasticity of Substitution Between Energy and Other Inputs


1
O_1
3
O_3
2
O_2
C_1 (predecontrol Isocost line)
C_4 (post-decontrol Isocost line assuming resource gains in energy sectors or international sectors adequate to offset efficiency losses in nonenergy sectors)
C_2 (post-decontrol Isocost line, assuming no resource gain in any energy sector)
C_3 (post-decontrol Isocost line assuming some resource gains in the energy and international sectors)
OTHER INPUTS
GAS

capacity to substitute for gas, the maximum output achievable occurs at point 2 on the production function 0_2.

However, if real resources are gained through efficiency improvements in the energy sector, the isocost line would not only change in slope, it would shift up to C_3. Output would be maximized at point 3 on production function 0_3. It still would be below the original level of output. If, and only if, the gain in resources in the energy sector is large enough to move the isocost line to C_4, will there be no loss in output.[9]

Obviously, the assumption of a zero elasticitiy of substitution is extreme. However, it does serve to illustrate the point that the overall impact of decontrol is dependent on two empirical issues -- the magnitude of resource gains and the elasticity of substitution.

As the elasticity of substitution increases, fewer resource gains are necessary to offset lost output due to rising prices. However, the question of whether or not the bottom line efficiency outcome will be positive or negative remains an empirical question. That is, one must empirically estimate what the elasticity is and how large the output losses will be and compare these to the resource gains. There is no theoretically certain conclusion.

The available evidence suggests that the elasticity of substitution for natural gas in industrial use is quite low. A recent estimate based on detailed analysis of both time series and cross national data placed it in the neighborhood of .5.[10]

If that is the case, there would have to be very large efficiency resource gains in the energy sector as a result of decontrol to achieve an overall positive impact. However, as noted above, the available evidence on the elasticity of supplies of natural gas does not suggest that such large gains are possible. Thus, the empirical evidence suggests that, in the overall economy, there will be net losses, not gains.

E. A Final Note

The macroeconomic data examined in CECA/RF's studies of natural gas decontrol is consistent with this pessimistic interpretation of empirical reality. That is, all econometric models (except one) predict negative economic impacts persisting for at least a decade. In an earlier report, CECA/RF pointed out that all the econometric models (except one) suggest that the negative economic impacts will persist ad infinitum.[11]

The one exception to this general conclusion occurs in the Hudson/Jorgenson Dynamic General Equilibrium Model (DGEM). As has been discussed in an earlier study, that exception can be easily explained.[12]

In fact, the DGEM model predicts losses in productivity in the overall economy as a result of decontrol -- losses that are still in evidence 15 years down the road. In fact, the decline in consumer surplus is three times as large as the efficiency gains in the energy sector. In fact, the losses in GNP in the economy due to declining productivity associated with decontrol are larger than the efficiency gains in the energy sector. However, this one model offsets these direct losses in GNP by an income transfer mechanism that is built into its structure. Thereby, it produces a positive net GNP effect.

The model achieves this result by assuming no price-wage-price spiral and therefore translates all price increases for gas directly into losses in labor income and increases in the income of gas-related capital. Thus, there is a massive transfer of wealth from those with a high propensity to consume to those with a high propensity to invest. In this way, the model raises the aggregate rate of investment in the economy through decontrol. In the long run, the model predicts GNP increases rather than decreases (as the other models do) because of this change in the aggregate investment rate.

Thus, even in the DGEM model, energy price decontrol does not stand on its own merits as economic policy. The bottom line is negative. It appears positive only because the model assumes a change in the aggregate rate of investment.

However, if the objective is to raise the aggregate rate of investment, why approach it through energy price policy, which causes severe short term disruptions and long term productivity losses? There should be preferable, more direct approaches which avoid the disruptions while capturing the benefits.

Appendix B

COMPARING THE OIL AND GAS ANALYSES

1. Introduction

In this report we have reviewed two sets of econometric analyses of the impact of rising energy prices -- the oil and gas analyses. With one set being largely retrospective and the other prospective, a comparison between the two is extremely inviting. Unfortunately, a number of factors make such a comparison extremely complex.

2. Methodological Issues

a. Basic Adjustments

First, as in the text of this report, we must measure the impact on a standard basis -- e.g., impact per 100 percent increase -- if the comparison is to be meaningful. Second, as in the text, we must also adjust the gas analysis to a flat base case because the oil analyses are usually done with flat base cases. Even with these adjustments other complications arise.

b. The Consumption of Fuels

Petroleum constitutes a much larger percentage of our total energy consumption than natural gas -- 40 percent compared to 25 percent. Therefore, for a given percentage increase in price, the impact of the oil price increase on the economy will be larger. Simple arithmetic suggests that the impact would be 1.6 times as large (.4/.25 = 1.6). Thus, for a given percentage increase in both oil and gas, we would expect the oil price increase to have an impact that is 1.6 times as large. However, we have also noted that, in the industrial sector, the price elasticity of gas is smaller than the price elasticity of oil. Thus, we might expect natural gas price increases to pose more problems for the economy. Therefore, an adjustment factor of 1.6 may be too large. However, for purposes of comparison, i.e., in order to use the oil analyses to predict the impact of gas price increases, we divide the oil impact by 1.6 to adjust the analysis for the fact that we consume so much more of it.

c. Foreign Resource Flows

At the time of the oil price shock, about 40 percent of the petroleum we consumed was imported. Presently, only about 5 percent of natural gas is imported. Insofar as resources that are not paid to foreign producers recycle within the economy, enhance the balance of trade and strengthen the dollar, the impact of rising petroleum prices led by foreign oil price increases would have a greater impact on the economy. Output would be reduced more and unemployment would be increased more. However, inflation would be about the same.

If we assume that every dollar paid for imports is "lost" to the economy, simple arithmetic suggests that the impact of rising oil prices will be 1.6 times as large as the impact of rising gas prices (.95/.6 = 1.6). We use this as an adjustment factor. This will be an overestimate because not all of the economic benefits of the exported dollars are lost. That is, some do recycle through the economy.

d. Monetary and Fiscal Policy

As pointed out in the report, the oil analyses did not take into account the monetary and fiscal policy responses to decontrol. That is, they assumed only that energy prices had changed. They did not assume other policy changes. Since monetary and fiscal policy changes were instituted in response to rising energy prices, the base case used to judge the impact of oil prices is incorrect. The actual impact would have been different had neutral monetary and fiscal policy been pursued.

The rule of thumb that was noted above is that monetary and fiscal policies may have doubled the impact. That is, losses in GNP and increases in unemployment may have been rendered twice as large as they would have been if accommodative rather than restrictive policies had been chosen. Inflation, on the other hand, was probably reduced by restrictive policies. That is, against the proper base case -- with neutral (flat) monetary and fiscal policies -- the impacts of rising energy prices would have been smaller on output and unemployment, but larger on inflation.

For purposes of comparison, we assume that one-quarter of the impact of rising oil prices observed in the econometric analyses should have been attributed to other policies. That is, the oil analyses misestimate the impact of rising prices. They underestimate inflationary impacts and overestimate output and employment impacts.

3. Results

Table B.1 presents the comparison between the natural gas analyses and the oil analyses with all of the adjustments made. It can be seen that the results are reasonably close. The direction of the predicted impacts are the same and they tend to differ by no more than one third. As pointed out in the report, the adjusted oil impact estimates fall roughly within the range of the high and low estimates of the gas analyses. The estimates included in Table 10 in the report are derived as follows:

$$\begin{array}{c}\text{Estimate from}\\ \text{oil analyses}\end{array} = \frac{\text{Adjusted Oil Estimate}}{\text{Adjusted Gas Estimate}} \times \begin{array}{c}\text{Mean of}\\ \text{Partial}\\ \text{Decontrol}\end{array}$$

Insofar as the retrospective analysis can be seen as more trustworthy than the prospective analyses, the fact that the two yield roughly equivalent results reconfirms our confidence in the predictions of the impact of gas price increases.

Table B.1

COMPARING THE ADJUSTED OIL AND GAS ANALYSES

	Difference from a Flat Base Case per 100 Percent Price Increases					
	Output (% Change)		Inflation (% Change)		Unemployment (% Change)	
GAS[a]						
Partial Deregulation						
Average	-1.35	- .4	2.7	.7	+ .5	+ .2
Adjusted	-1.67	-3.2	3.3	2.5	+ .6	+1.1
Full						
Average	-1.3	- .8	.2	.7	+ .5	+ .2
Adjusted	-1.6	-3.6	2.7	2.5	+ .6	+1.1
OIL[b]						
Mork & Hall	-3.8	na	5.4	na	+2.7	na
Eckstein/DRI	-5.6	-6.6	5.6	4.8	+3.4	+6.9
Thurman/Berner (MPS)	-2.9	-5.8	2.9	2.9	+1.5	+3.1
Average	-4.1	-5.8	4.0	3.9	+2.5	+5.0
Adjusted	-1.2	-1.7	2.0	2.0	.75	1.5

[a] From Tables 5-7.

[b] From Tables 2-4.

FOOTNOTES TO APPENDICES

[1] The studies included in this review are: Kenneth J. Arrow and Joseph P. Kalt, Petroleum Price Regulation: Should We Decontrol? (Washington, DC: American Enterprise Institute, 1979); Glenn C. Loury, An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices (Washington, DC: Natural Gas Supply Association, April 1981); John C. Felmy, The Economic Efficiency Gains of Accelerated Natural Gas Price Decontrol; A Micro-Macro Linked Approach (ICF Incorporated, submitted to the U.S. Department of Energy, Office of Policy, Planning and Analysis, Division of Energy Deregulation, December 1981); Paul Krugman, Real Exchange Rate Adjustment and the Welfare Effects of Oil Price Decontrol (MIT Energy Laboratory, Discussion Paper No. 1, May 1981).

[2] Consumer Energy Council of America Research Foundation, Natural Gas Decontrol: A Case of Trickle Up Economics (Washington, DC, January 1982).

[3] Krugman, Real Exchange Rate, p. 4 and U.S. Department of Energy, Two Market Analysis of Natural Gas Decontrol (Washington, DC: Government Printing Office, November 1981) define producer surplus or producer gain as the area between the supply curve and the equilibrium price. This represents the difference between the cost of production and the price producers receive.

[4] Consumer surplus is a more familiar concept than producer surplus. It can be measured as the difference between the utility of consumption for consumers, implicit in the demand curve and the price paid (see Paul Samuleson, Economics, Eleventh Edition [New York: McGraw Hill, 1980], p. 412).

[5] It appears to be conceptually preferable since the deadweight consumption loss can be directly compared to the potential change in consumer surplus that would occur if the consumption loss were eliminated.

[6] CECA/RF, The Past as Prolgue I.

[7] The elasticity of substitution is the critical determinant of the real income reduction as outlined in the report. Thus, all of the sources cited in Section B above are relevant. A most interesting exercise which shows specifically the impact of different assumptions about the elasticity of substitution has been conducted by William W. Hogan and Alan S. Manne ("Energy-Economy Interactions: The Fable of the Elephant and the Rabbit?" in Robert S. Pindyck, ed., Advances in the Economics of Energy and Resources,

Volume 1: The Structure of Energy Markets [Connecticut: JAI, 1979]).

[8] If the elasticity of substitution is zero, then the demand elasticity would be zero as well. Obviously figures A.1-A.8 do not reflect demand elasticities of zero. The figures are intended to be illustrative and any empirical specification of the argument should certainly resolve this apparent inconsitency.

[9] Several of the secondary potential efficiency gains identified by Arrow/Kalt -- such as price shock protection, more appropriate stockpiling behavior, etc. -- can best be represented either as shifts in the isocost line or changes in the shape of the production isoquant. This is in addition to the direct impacts on the energy sector. (See, in addition, William W. Hogan, "Import Management and Oil Emergencies," in David A. Deese and Joseph S. Nye, Energy and Security [Cambridge: Ballinger, 1981]).

[10] Robert S. Pindyck, The Structure of World Energy Demand (Cambridge: MIT Press, 1979), p. 222.

[11] CECA/RF, Natural Gas Price Deregulation: A Case of Trickle Up Economics.

[12] Ibid.

STATEMENT of ENERGY CONSUMERS AND PRODUCERS ASSOCIATION
to the ENERGY AND NATURAL RESOURCES COMMITTEE
of the UNITED STATES SENATE
ADVOCATING A FREE MARKET FOR NATURAL GAS

The Energy Consumers and Producers Association has a membership of 1200 independent producers and royalty owners in 35 states. The Association was formed in 1977 to help small independent producers cope with the burgeoning complexities of the Mandatory Petroleum Pricing Regulations and the autocratic treatment producers were receiving from the Federal Energy Administration and its successor, the Department of Energy. In 1978, the Natural Gas Policy Act , spawned a complete new set of exceedingly intricate rules and paperwork requirements. In 1980, the Windfall Profit Tax Act created another new set of regulations while absorbing most of the production rules of the Mandatory Petroleum Pricing Regulations. Oil was price decontrolled in 1981, but never deregulated.

Small independent producers without their own legal staff and sophisticated computers have found it very difficult to keep up with the myriad rules, amendments, interpretations, and paperwork requirements. But the primary concern of this committee is not the aggravation, expense, and uncertainty created by Congress in the oil and gas industry. This committee wants to know if the costs of massive Federal intervention in the gas market have been worthwhile.

We believe the answer is unrebuttable. Federal management of oil and gas pricing has failed to solve any long term energy problems and has been instrumental in creating and perpetuating a series of "energy crises."

The oil price fixers encouraged consumption with artificially low prices for domestic oil. When the first gasoline lines formed, they demanded government gasoline rationing. Oil was supposed to be an "inelastic" commodity -- one whose consumption would not vary much because of price. Under oil decontrol, consumption decreased tremendously, drilling increased tremendously, petroleum products are plentiful, and oil prices are now falling.

The gas price fixers get full credit for the gas shortage in the 1970's which occurred only in the price-controlled interstate market where "just and reasonable" prices were very low prices.

(2)

Once again came the cry for more, not less, government interference to remedy the problems created by government.

The Natural Gas Policy Act of 1978 was only a partial victory for the gas fixers. They won government restriction of the use of gas and price controls on all gas. Opponents of price controls won higher ceiling prices for new gas and eventual decontrol of some gas. This hybrid compromise is now spawning new market problems. It has also failed to greatly increase gas drilling. Oil drilling for new supplies in 1981 increased 40% over 1980 while gas drilling increased only 7% during the same period.

To repeat the summation of C. M. Butler, Chairman of the Federal Energy Regulatory Commission, "Surely one of the principal lessons of our experience with natural gas price regulation is that natural gas markets are too complex and too fast-changing to be rationally ordered by administrative or legislative fiat. Attempts to do so result not merely in inefficiency; in the end they fail to serve the interests of fairness as well."

During two days of hearings on March 23 and 24, this Committee heard from all links in the natural gas chain -- producers, pipelines, distributors, and end users -- as well as government agencies. The majority conclusion is that government should stop doing what it does poorly: regulate the domestic gas market.

We believe three main points were well-established by testimony.

(1) The free market is the most effective means of bringing supply and demand into equilibrium and regulating use.

(2) Natural gas prices will be constrained by a free market. Gas is a competitive fuel and many end-users have the capacity to switch. Gas use, like oil use, responds to price.

(3) In order to establish a free market for natural gas, government rules regulating access to supplies, price, contracts, transportation, use, and rate design must be amended.

We urge this committee to support enactment in early 1983 of a plan for complete decontrol of natural gas. We also urge this committee to oppose any attempt to attach a windfall profit tax on gas as unworkable and unproductive. Drilling for oil or gas, like consumption of oil or gas, responds to price. Producers ask only that a free market, and not the Federal government, dictate the terms.

EXXON COMPANY, U.S.A.
POST OFFICE BOX 2180 · HOUSTON, TEXAS 77001

SIDNEY J. RESO
SENIOR VICE PRESIDENT

April 14, 1982

The Honorable James A. McClure
United States Senate
3121 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator McClure:

We commend your efforts to investigate thoroughly the problems related to the Natural Gas Policy Act. The record before the Committee should provide some suggestions for solutions to this Country's natural gas dilemma. The hearings held on March 22 and 23 have been beneficial. We believe further hearings would be helpful in providing a well-balanced assessment of all aspects of natural gas policy.

We agree with the producing industry position as outlined in the Natural Gas Supply Association's testimony and the consuming industry position outlined by the Chemical Manufacturers Association on March 23. We would like to emphasize the following points for your further consideration.

We think that the solution to the natural gas dilemma is to let the market work by gradually phasing out controls on all gas by 1985 without a "windfall profits" tax. We believe that a realistic phased decontrol plan would provide substantial benefits to consumers and the economy and would have a positive impact on national energy security. First, decontrol would encourage exploration and result in increased supplies. This would have a favorable long-term benefit on the nation's consumers, far outweighing the possible minimal short-term costs of phased decontrol. Second, it would avoid the 1985 price jump which is an inherent problem with the Natural Gas Policy Act. Third, it would avert inefficient and inequitable distribution of natural gas supplies among different regions of the country. Fourth, phased decontrol would reduce our still-heavy dependence on unreliable foreign oil with important nationwide and perhaps even international economic and political benefits.

We believe it is essential that Congress avoid a piecemeal approach to the problems of existing natural gas law and address the broad perspective of natural gas policy including the NGPA and related gas statutes, such as the Powerplant and Industrial Fuel Use Act.

Decontrol of crude oil has clearly illustrated that unregulated markets can work in the best interest of all U.S. citizens. Since oil price controls were eliminated fully in January 1981, the decline in domestic production has halted. Based on the crude oil experience, we think decontrol of all natural gas would increase exploration for new supplies and increase production from old fields, slow or stop the decline in natural gas reserves, increase total production substantially, encourage conservation, reduce imports of oil and gas, and help avoid regional shortages that could occur under NGPA.

Again, we support your efforts to fully evaluate all aspects of this very complicated issue, particularly in view of the substantial amount of unsupported and erroneous data now being circulated to the American public. Serious consideration of comprehensive legislative proposals such as that introduced by Senators Johnston and Long prior to the end of this Congress will permit a timely resolution of these matters in early 1983. We hope to have the opportunity to work closely with you and your staff to this end.

Sincerely,

Sidney J. Reso

SJR:mhc

c: Senator Gordon J. Humphrey
Senator J. Bennett Johnston
Senator Russell B. Long
Senator Don Nickles

MAR 19 1982

GENERAL ELECTRIC

ELECTRIC UTILITY
SALES DIVISION

GENERAL ELECTRIC COMPANY . . . . . . 777 FOURTEENTH STREET, NORTHWEST
WASHINGTON, DISTRICT OF COLUMBIA 20005, Phone (202) 637-4000

March 19, 1982

SENATE COMMITTEE
ENERGY AND NATURAL RES
RECEIVED
MAR
WASHINGTON

The Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
United States Senate
3121 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator McClure:

The Energy and Natural Resources Committee has scheduled hearings on natural gas policy, beginning March 22, 1982, to explore existing law relating to natural gas policy and related regulatory problems. The General Electric Company believes there is a flaw in the present language of the Powerplant and Industrial Fuel Use Act relating to the use of natural gas in peakload powerplants, and that the national interests can be served by a technical correction to Section 212(g).

The attached position statement describes the problem area we have experienced, and is submitted for consideration by your committee during their deliberations on the larger subject of natural gas policy. We would be happy to discuss our views in more detail with you or members of your committee staff at any time.

Sincerely yours,

Warren W. Walkley

Warren W. Walkley, Manager
Energy Office
Electricity Utility Sales

WWW/rlb

Attachment

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
MAR 22 1982
WASHINGTON, D.C. 20510

ISSUE: Use of Natural Gas in Peakload Powerplants

RECOMMENDATION: Amend the Powerplant and Industrial Fuel Use Act to permit use of natural gas in peakload powerplants sited in attainment areas.

BACKGROUND: When the Powerplant and Industrial Fuel Use Act of 1978 (FUA) was enacted, natural gas was perceived to be in shorter supply than crude oil and petroleum products. Accordingly, the provisions relating to utilization of natural gas in powerplants were more restrictive than those for petroleum products. Notable examples were the "off-gas" provisions of Section 301 relating to existing electric powerplants, and the restriction of Section 212(g) on the use of natural gas in new peakload powerplants only upon certification by EPA that the use of petroleum or an alternate fuel would cause a National Ambient Air Quality Standard to be exceeded (restricts use of natural gas to plant sites located in non-attainment areas).

There is general agreement today that natural gas is in more plentiful supply than crude oil, and that large resources and reserves are located in the continental United States. These reasons alone support the need for a change in the existing legislation, and Congress recognized this last year when the "off-gas" provisions of Section 301(a) were repealed by the Omnibus Budget Reconciliation Act of 1981. An amendment of Section 212(g) would bring consistency to the present legislation that is sorely needed. The restrictions on the use of natural gas in existing peakload powerplants {Section 312(f)} were removed when Section 301(a) was repealed. Thus, to permit use of natural gas in a new peakload powerplant, DOE must now grant a permanent exemption with respect to oil, and a temporary public interest exemption {Section 211(c)} with respect to natural gas.

The amount of natural gas used by peakload powerplants is minimal since they are restricted by law to a maximum of 1500 full-load hours of operation per year, and generally operate well below this limit because of economic considerations. Peakload powerplants are utilized mainly in the summertime when the demand for natural gas is low, so they are not competing with homes, schools, and hospitals at times when gas pipeline capacity may limit the supply in some geographic areas. Thus, national interests can be served by changing the existing legislation to treat new and existing peakload powerplants in the same manner, and let the fuel choice between natural gas and petroleum be determined by economic and availability considerations.

SUGGESTED CHANGES: Amend Section 212(g) to read as follows:

(g) PERMANENT EXEMPTION FOR PEAKLOAD POWERPLANTS. - After consideration of a petition (and comments thereon) for an exemption for a powerplant, the Secretary shall, by order, grant a permanent exemption under this subsection with respect to natural gas or petroleum if the petitioner certifies that such powerplant is to be operated solely as a peakload powerplant.

Getty

Getty Oil Company | 3810 Wilshire Boulevard, Los Angeles, California 90010 • Telephone (213) 739-2207

B. E. Williams, Group Vice President, Supply and Transportation

April 15, 1982

SENATE COMMITTEE ON
ENERGY AND NATURAL RESOURCES
RECEIVED
APR 16 1982
WASHINGTON, D. C. 20510

The Honorable James A. McClure, Chairman
Senate Energy and Natural Resources Committee
3106 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator McClure:

Getty Oil Company appreciates the opportunity to submit testimony to the record of the Senate Energy and Minerals Committee's hearings on "All Aspects of the Natural Gas Issue." Getty produced 875,300 thousand cubic feet per day of natural gas in 1981 and 22,100 barrels per day of natural gas liquids. Getty, therefore, is very interested in the natural gas decontrol issue.

The Natural Gas Policy Act (NGPA) of 1978 continues price controls on most natural gas through the mid-1980's. This Act, in conjunction with the Power Plant and Industrial Fuel Use Act (FUA) of 1978, has been responsible for severely distorting natural gas market relationships.

Getty believes that consumers and the nation as a whole would be best served by the complete deregulation of natural gas. Getty therefore advocates the repeal of both the NGPA and the FUA. Deregulation would remove the economic waste inherent in all natural gas price and allocation programs. Government controls on natural gas result in losses of income and output to the national economy because of three factors: (1) Price controls on natural gas send false cost signals to those involved in productive activities utilizing natural gas; (2) regulatory technical/legal criteria supplant economic criteria as the basis for development of natural gas resources, causing additional waste; and (3) controls require an expensive administrative apparatus to allocate supplies.

Economic logic and the history of regulatory intervention are providing renewed support for policies based on unregulated market principles and government policy should move quickly in that direction. The success of oil price decontrol and the subsequent increase in production give ample proof of the effectiveness of market pricing.

Although the NGPA granted some initial price incentives which encouraged increased gas exploration activity in 1979 and 1980 over that of recent years, these incentives will decline substantially during the next few years until natural gas prices are actually decontrolled because regulated natural gas prices are likely to increasingly diverge from crude oil prices. This will reduce the incentives to explore for and develop natural gas energy resources. The price controls of the NGPA therefore hold back current and potential production of natural gas.

Getty's position advocating the removal of all natural gas price and allocation controls is based upon the fact that government controls cause the nation to suffer losses in income and output from what would be attained if these controls did not exist. The nation incurs production and income losses because:

(1) Price controls always cause a commodity's price to diverge from its resource value or replacement cost. There is a net loss of income and output to the economy whenever this occurs. While some (existing) consumers of a product may gain when the price is below its replacement cost, their gains do not equal the losses suffered by other consumers who would be willing to pay for the commodity rather than do without it because of limited supply. For consumers as a group, then, there are general gains which result whenever prices correspond to replacement costs. In his study, "An Analysis of the Efficiency and Inflationary Impact of the Decontrol of Natural Gas Prices", Professor Glenn C. Loury of the University of Michigan estimated that decontrol of natural gas could lead to an improvement in resource allocation worth from $4 to $5 billion annually. The NGPA does not allow this to occur because of its price ceilings.

Recent annual reserve additions of natural gas have fallen short of corresponding annual consumption. America is using up natural gas faster than producers are finding new reserves, even though there is good reason to believe that this form of energy is potentially abundant. Producers are currently finding 10 to 15 trillion cubic feet per year of new gas supplies while America is consuming about 20 trillion cubic feet. Through the 1970's, proven reserves decreased from about 290 trillion cubic feet to about 196 trillion cubic feet. It is clear that America is living off inventories, and current government policies are doing nothing to reverse that trend. Indeed, they are only making the problem worse. Unless reserve additions begin to approach consumption more closely, the long-run projection is distinctly one of less domestic availability. And, gas consumption can be expected to grow over time if there are no regulatory restrictions. However, as long as the NGPA remains in effect, price disparities between oil and gas (on a BTU basis) will create a tendency toward less natural gas production relative to oil. Already, the differential between natural gas and oil prices in end-use markets has increased substantially since 1978. Thus, while natural gas drilling activity has increased during the past couple of years, the economic incentives presently encourage oil exploration and development to a much greater extent.

(2) The NGPA places gas in certain classes depending on such factors as the region where the gas is produced, its vintage, size of producer, and whether the gas is for interstate or intrastate markets. Gas in each category has a different price. But, because these categories have no relationship to economic criteria, natural gas exploration and development activities become misdirected from areas where it could be produced most economically. For example, a regulatory incentive is provided by Section 107 which grants decontrolled prices for production wells below 15,000 feet drilled after February 19, 1977. In addition, it becomes profitable to sell gas in categories where higher prices could be realized. As a result, a costly enforcement apparatus is also required to implement these regulations.

The pricing structure of the NGPA has created artificially high decontrolled prices under Section 107, currently as high as $7 - $9 per thousand cubic feet, because decontrolled gas is averaged in with controlled categories held at artificially low rates of as little as $.60 per thousand cubic feet. The price of all gas with decontrol would have to compete with the price of fuel oil minus transportation costs. It is estimated that this would result in a well head price of natural gas between $4 - $5 per thousand cubic feet. The artificially high Section 107 natural gas prices would be reduced with decontrol while the price of controlled categories would move up to the market level competing with fuel oils.

If complete price deregulation were to occur for all natural gas, most gas would move to free market levels. However, a considerable amount is tied to contracts which do not contain a deregulation clause and therefore prices under those contracts would not move to market price levels. Under the current provisions of the NGPA, the Department of Energy has estimated that 28 to 34 percent of natural gas would still be under controls in 1990. The rate at which delivered gas prices would rise would depend on the terms of contracts already in effect between producers, pipelines, and utilities.

(3) Regulatory burdens have increased under the NGPA. The Act involves 65 pages on six titles of law with another 60 pages of joint House-Senate explanatory statements. The real administrative burden, however, stems from the voluminous and ambiguous regulations which have been promulgated pursuant to the law. As a result, significant regulatory delays occur in implementing the Act. Producer compliance with the NGPA requires federal reports on all natural gas sales, and the Act has extended these requirements to previously exempt intrastate and small producers (300 million cubic feet per day or less). The wellhead price certification process is particularly burdensome. The filing and collection process has involved increased record keeping at the producer level. The Fuel Use Act also necessitates compliance with cumbersome reporting and exemption regulations.

There could, however, be some minor administrative/regulatory changes made relative to natural gas which would not necessitate Congressional action. These changes would be limited to possible expanding of some of the NGPA categories. For example, current regulatory action by FERC proposing to increase the price allowed newly discovered gas found in formations from 10,000 to 14,999 feet and OCS gas in water depths below 300 feet would be a step in the right direction. However, such changes would not have the overall beneficial impact on the supply and demand for natural gas that complete decontrol would accomplish. If there is to be effective decontrol of natural gas, it will have to result from Congressional, rather than regulatory, action. We urge you to take that action.

There are a number of approaches which Congress might take in proceeding to overhaul the NGPA to recapture the original intent of the legislation to move natural gas prices into parity with oil by 1985. Congress could, for example, move Section 102 (new gas) and 103 (new onshore production wells) gas up at far faster rates and expand the categories qualifying for new natural gas prices. Another approach would be to move all natural gas to decontrolled prices (except for that volume of gas under non-abrogable long-term contracts). This might be accomplished through immediate decontrol, or following the pattern of oil decontrol, through "phased" decontrol which would remove a percentage of gas from controls every month between now and 1985.

In moving toward decontrol, however, it is Getty's position that any attempt to tie a "windfall" profits tax to natural gas decontrol should be rejected by Congress. The windfall profits tax concept should be repealed, not expanded. Every asset is subject to continual revision in its economic value in response to unforeseen changes in supply and demand. A "windfall" tax is nothing more than an excise or production tax levied by government so that it confiscates some or all of the increase which has accrued to private asset holders. Taxing the production of natural gas as a quid pro quo for ending wasteful controls is counterproductive because such a tax would distort price signals to producers much as controls now do. It would result in the withdrawal of some investment capital so that consumers ultimately pay higher prices for smaller quantities of natural gas. The U.S. economy must develop an efficient energy sector and this requires unregulated energy markets which are free from the burdens of punitive tax policies. This is, in fact, the thrust of the National Energy Policy Plan III, and we support the implementation of unregulated market policies as the best way to economic prosperity in a changing world economy.

In conclusion, Getty takes the following stands on these natural gas policy issues: Support of FERC regulatory actions to move more natural gas into decontrolled categories or to raise the price of controlled natural gas closer to market prices; repeal of the Natural Gas Policy Act of 1978; opposition to any "windfall" profits tax on decontrolled natural gas; opposition to development of "standby" natural gas price and allocation controls; and repeal of the Power Plant and Industrial Fuel Use Act of 1978.

The adoption of these policies will be beneficial to the long term well being of consumers and producers of natural gas while increasing the efficiency of energy use throughout the economy. We commend and encourage your efforts to remove the last vestiges of government price and allocations controls from energy markets.

Sincerely,

B.E. Wil

BEW:sas

NAM
National Association
of Manufacturers

H. RICHARD SEIBERT, Jr
Vice President
Resources and Technology Department

April 5, 1982

The Honorable Wendell Ford
United States Senate
363 Russell Senate Office Building
Washington, DC 20510

Dear Senator Ford:

On March 23, 1982, the National Association of Manufacturers (NAM) had the opportunity to testify on natural gas deregulation before the Senate Energy and Natural Resources Committee. Mr. James S. Rubin of Allied Corporation, testifying on our behalf, was asked several questions by you concerning testimony which you stated he had previously given on the subject. Although Mr. Rubin stated his inability to recall any such testimony, you nevertheless insisted that it was from his prior testimony given on behalf of NAM.

Subsequent to the conclusion of the hearing, we were informed that the testimony you had been referring to was not that of Mr. Rubin, but of a different witness representing an altogether different organization.

We hope that this clears up the matter; and, by copy of this letter to Chairman McClure, are asking that the record reflect that indeed you were not truly questioning Mr. Rubin from his previous testimony.

Should you or your staff have any questions on this, please feel free to call me.

Sincerely,

Richard Seibert

H. Richard Seibert

1776 F Street, N.W.
Washington, D.C. 20006
(202) 626-3700

NATURAL GAS SUPPLY ASSOCIATION

1025 Connecticut Avenue, N.W.
Suite 402
Washington, DC 20036
(202) 223-9575

Nicholas J. Bush
President

April 23, 1982

The Honorable James A. McClure, Chairman
Committee on Energy and Natural Resources
3106 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

During the Committee's natural gas hearings March 23, the Consumer Energy Council of America submitted various studies which purported to show that a phased deregulation of natural gas prices is not in the best interest of consumers. The Natural Gas Supply Association sharply questions this finding, and has analyzed the studies submitted by the Consumer Energy Council. The enclosed paper sets out our conclusions. I hope it will be included in the published record of the hearing.

Yours sincerely,

Nicholas J. Bush

NB/cmm

COMMENTS ON RECENT STUDIES PREPARED BY THE CONSUMER ENERGY COUNCIL OF AMERICA

In connection with his testimony before the Senate Energy Committee on March 23, 1982, Dr. Mark Cooper included in the record a report prepared by the Consumer Energy Council of America entitled Past As Prologue II: The Economic Impact of Rising Energy Prices. Reference is also made to an earlier report prepared by his organization entitled Natural Gas Decontrol: A Case of Trickle Up Economics.

These reports state the obvious when they note that energy price increases have had a tremendous impact on the economies of the industrialized world. The reports go on to conclude that if the Federal government were to remove price controls and allow natural gas to be priced in competition with other fuels, that the price increases would be so severe that it would be a disaster for consumers.

The Consumer Energy Council of America, as well as the Citizen/Labor Energy Coalition, take the position that the price of natural gas should not be established by market forces. Instead, they advocate that the Federal government should continue to set the price of natural gas below market value and thus make natural gas cheap for consumers. In making this argument, the consumer groups do not point out that by holding the price of natural gas below its market value, that the price of all other fuels - oil, electricity, coal, etc., will necessarily increase in order to bring forth additional supplies of those fuels to make up for the natural gas that is not developed. In the aggregate, consumers of energy end up paying more for all their energy, not less, with continued regulation. The only beneficiaries are those consumers who happen to use natural gas. The victims are those who use every other form of energy.

The Consumer Energy Council attacks various studies, including those prepared by the Department of Energy. Appendix A to the Past as Prologue I is devoted to the proposition that natural gas markets are not competitive. In fact, the lack of competition in energy is a major theme of the consumer position. This charge has been made time and again despite the fact that every objective observer who has analyzed the industry has concluded that the natural gas industry, given the chance, is capable of competitive performance. The Federal Power Commission in its Annual Report for Fiscal Year 1973 reported to Congress that "After careful analysis we have concluded that workable competition exists in the natural gas industry." The Office of Economic Analysis of the Interior Department, November 1973, concluded as follows:

> "After considering the theorectical and empirical evidence concerning the competitive nature of the natural gas producing industry, there are few, if any, firm facts to suggest that the

> "industry could extract monopoly profits from the American public if natural gas wellhead prices were deregulated. On the contrary, such evidence as the lack of barriers to entry to production, the lack of control of a large share of the production by a few firms, the large number of producing firms, and the actions of the unregulated intrastate gas market all point to the existence of an existing and continuing workably competitive natural gas producing industry."

The Federal Trade Commission in a 1974 Staff Report entitled "Concentration Levels and Trends in the Energy Sector of the U.S. Economy," and in a February 1979 report entitled, "The Economic Structure and Behavior of the Natural Gas Production Industry," concluded that the natural gas supply industry is competitive.

The Trade Commission's Bureau of Economics in its 1979 report concluded "that Federal price regulation is not necessary to control monopolistic tendencies in the gas sector."

If the consumer groups are to continue to make anti-competitive allegations concerning the natural gas industry, they should be able to support their allegations by producing solid analytical work to refute the numerous studies that have been made concerning the competitiveness of the industry.

The various studies prepared by the Consumer Energy Council focus on the impact that higher price levels will have on the overall economy. If one were to follow the line of reasoning of these studies, one could expect that a case could be made for imposing Federal price controls throughout the entire economy. Yet, price is only one factor, albeit an important one, in examining the impact of Federal price controls on consumers and the economy. For example, in a paper entitled The Past as Prologue I, the Consumer Energy Council asserts that oil decontrol has been a failure and that the recent reduction in gasoline price levels has been unrelated to decontrol and that these price levels are "seasonal". Such assertions suggest a fundamental lack of understanding of the relationship between supply and demand and the nature of world energy markets.

Since oil decontrol, the average cost of imported oil has fallen by about $4.00 a barrel, the average cost of domestic crude has fallen below the pre-decontrol level, and the average price of gasoline has fallen by about 15 cents per gallon since it reached its peak in March 1981. Imports in 1981 were the lowest since 1972. In the first quarter of 1982, we imported less than one-third of the oil we use. The decline in domestic oil production has ceased and we are witnessing a small upturn.

The impact of the recession on these gains appears to be small. In 1981, the gross national product was two percent greater than in 1980 yet, there was a decline in energy consumption of more than two percent. This was the greatest efficiency increase in more than thirty years - more than four percent in one year. (White House Press Briefing, March 22, 1982).

Further, in addition to attempting to evaluate the impact that an increase in natural gas price levels would have on the economy, there is also a need to evaluate potential benefits that would accrue to the economy. The consumer groups, for example, have failed to focus on the adverse economic impact that continued price controls will have on certain geographical regions in the country should the Natural Gas Policy Act remain unchanged. An evaluation of the strengths and weaknesses of the many economic studies on natural gas decontrol, including some prepared by consumer groups, was recently analyzed by Foster Associates for the Chemical Manufacturers Association. That study was submitted with Mr. Cohn's testimony on March 23, 1982.

In all events, there is one law that even Congress cannot change - that is the economic law of supply and demand. No matter how much you try to regulate the price of a commodity, the market for it always remains free in the sense that in the end you always get what you pay for and, if you don't pay enough, you don't get enough.

NORTHERN ILLINOIS GAS

One of the NICOR
basic energy companies

1627 K Street, N.W., Suite 202, Washington, D.C. 20006 Phone (202) 659-9224

April 23, 1982

The Honorable James A. McClure
United States Senate
Chairman, Senate Committee on
Energy and Natural Resources
3106 Dirksen Senate Office Building
First and C Streets, N.W.
Washington, D.C. 20510

Dear Senator:

The Northern Illinois Gas Company (NI-Gas) is a gas distribution company serving in excess of 1,400,000 residential, commercial and industrial customers in the northern one-third of Illinois, excluding the City of Chicago. In years past NI-Gas has been a member of the United Distribution Company (UDC) and has worked actively in formulating its policies and position statements on questions of national interest to the gas industry. NI-Gas withdrew from the UDC at a time when it felt that its interests could be better expressed by its personal representative in Washington.

For the past several years NI-Gas, along with all other distribution companies in the nation, has been suffering from loss of load primarily due to conservation brought about by higher prices and by fuel switching on the part of industrial customers as alternate fuels compete with gas on a cost basis. NI-Gas is deeply concerned that this trend of lost industrial load will continue to the detriment of all customers on the system.

NI-Gas had examined the statement made by C. William Cooper of the UDC before the Committee on Energy and Natural Resources in the hearings on Natural Gas Policy and Regulatory issues. NI-Gas feels the three problems identified by Mr. Cooper and the recommendations outlined are accurate. NI-Gas emphatically endorses the proposed recommendations of the UDC that Mr. Cooper outlined at that time.

In addition, in order to uphold its position on the "Market Signal Problem" NI-Gas advocates that of a pipeline's total fixed cost only the rate of return and associated taxes should be part of the commodity component. Such a rate design was recently filed in RP81-49 by Natural Gas Pipeline Company of America. NI-Gas feels this rate design will create maximum incentive for pipeline marketing efforts and give rapid signals to producers as to the acceptance of gas in the market place.

Very truly yours,

L. Raymond Billett

L. Raymond Billett
Assistant Vice President
Supply - Administration

An Investor-Owned Taxpaying Business

The Philadelphia Council of Neighborhood Organizations
1352 WEST GIRARD AVENUE
PHILADELPHIA, PA. 19123
Phone: CE 5-2720

My name is Father Joseph M. Kakalec, S.J. I am the President of the Philadelphia Council of Neighborhood Organizations. On behalf of the members of this Council, I am here to oppose the decontrol of natural gas.

During the year of 1980, residents and businesses in the Philadelphia area spent $2.0 billion for energy to keep their homes warm and their businesses in operation. The area of which I speak represents approximately 5.5 million persons and five counties: Philadelphia, Montgomery, Chester, Bucks and Delaware.

Of the various modes of energy used, natural gas represented 61%, oil, 26%, electricity, 11% and all other types 2%. Of the total dollars spent for energy $1.7 billion was spent on exported oil and gas which dollars went to foreign nations and a few gas producing states. The economy of this area, therefore, lost $1.7 billion that could have been used for other productive and job producing investments.

If one reflects upon the variety of forces that work together to make the energy picture more dismal - even without deregulation, we are faced with a situation that demands action. First, any future gas increase in prices will have a profound effect upon the area's housing especially among low income groups. Second, energy efficiency and conservation are very young and primitive and not yet an organized industry.

Father Kakalec, page 2, continued

Third, local energy policy has a long way to go and there are no clear lines between public and private firms, institutions and procedures. Fourth, unequal burdens, situations and needs require that any system contian more than one program and approach.

All of these factors add up to give the area a very serious and unevialbe future with which to cope. For example, with deregulation between January of 1983 and 1985, the Philadelphia economy could expect to lose over 42,000 jobs due to declining consumer spending alone. Second, the local economy for natural gas users, both commercial and industrial, will exceed $844 million in the same time period thus adding almost another billion to the cost of energy for Philadelphians. Consumers would add another $955 million totalling some $4.0 billion in energy costs for our area.

If gas is deregulated and the Philadelphia area is faced with another round of increases there will be very serious reactions. We simply cannot face a greater outflow of dollars for energy alone. Nor can we be faced with increased anxiety and vulnerability. Nor, finally, can we have our competitive position for jobs, revenues and the like erode even further. Congress and this Committee must not make our area, our industries, our institutions suffer unprecedented hardships simply in their effort to keep warm and their businesses operating by raising gas prices which are more than fair and high enough.

STATEMENT OF
PHILLIPS PETROLEUM COMPANY
SUBMITTED FOR THE RECORD
IN HEARING CONCERNING
THE NATURAL GAS POLICY ACT OF 1978
HELD BY THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

Phillips Petroleum Company is pleased to submit this statement for inclusion in the record of the hearing of the Senate Committee on Energy and Natural Resources concerning shortcomings of the Natural Gas Policy Act of 1978 held on March 22 and 23, 1982. Phillips is a member of the Natural Gas Supply Association, and we support the testimony of H. E. (Gene) Wright previously submitted to the Committee on behalf of the NGSA on March 23, 1982. Phillips shares the concern of Mr. Wright and many other witnesses appearing before the Senate Energy Committee hearings that the Natural Gas Policy Act of 1978 (NGPA) has a skewing effect on both supply and demand for natural gas in the United States. Only a movement to full decontrol of producer prices will result in the most efficient levels of exploration, production and use of natural gas in this country.

The purpose of this statement is to discuss a very important issue which has been overshadowed by the general gas pricing debate. The Federal Energy Regulatory Commission has almost totally failed to implement the so-called "production related cost" provisions of Section 110(a)(2) of the NGPA for the three and one-half years which have passed since its enactment. The Commission's refusal to act has had a severe effect upon Phillips and other producers who perform services beyond the finding and producing of natural gas. The NGPA applies to all "first sales" of natural gas in the United States, including sales made downstream from the wellhead after field compression, gathering, and processing for the removal of impurities and natural gas liquids. Phillips typically purchases and produces gas in the field, compresses and gathers low pressure gas to a central point where processing occurs, and resells the remaining residue gas. Phillips operates more than 17,000 miles of gas gathering lines and owns interests in 58 gas processing plants in the United States. Phillips is the largest domestic producer of natural gas liquids. Phillips purchases more gas than any other independent producer.

Producers and producer-resellers of purchased gas have been denied any reasonable opportunity to recover the costs of performing additional services, such as gathering and compression of gas, in gas sales rates. Producer-resellers who attempt to compete with pipeline companies for the purchase of gas in the field cannot do so on an equal basis. Under the Commission's "reseller rule," the NGPA maximum lawful price applicable to a producer's purchase of gas is usually the same maximum price applicable to his resale of the same gas. Pipeline companies do not face the stringent regulatory restrictions imposed upon NGPA "first sellers" as to the costs of compression and gathering of natural gas and other costs incurred in the initial stages of the gas marketing process.

Section 110(a)(2) of the NGPA states that maximum lawful prices for gas may be adjusted upward to cover "any costs of compressing, gathering, processing, treating, liquefying or transporting such natural gas, or other similar costs, borne by the seller and allowed for, by rule or order by the Commission." The statute refers to the listed costs as "production related costs." This is a misnomer, because the types of costs mentioned are really no more "related to" production of gas than any other activity or cost incurred in bringing gas to market. The listed costs are simply costs which are frequently incurred in the first stages of the gas marketing process which can be borne either by producers, purchasers or third parties. The basic problem is that the Commission allows compensation for these types of costs to interstate pipeline companies in their rates, and state regulators allow similar cost recovery for intrastate pipelines; but when producers undertake to perform the same services in a gas sales contract, they are allowed almost no additional compensation. The same exclusionary rule applies to "first sale" resellers, who have almost no margin between the maximum lawful prices allowed for their purchase and resale of natural gas.

The Federal Power Commission had established small additive allowances for gathering and onshore delivery by producers in the area rate cases conducted in the 1960's and concluded in the early 1970's. These allowances ranged from 0.4 to 2.5¢ per Mcf. They were established based on the 1962 All Area Questionnaire to producers subject to FPC regulation and on evidence in the area rate cases whose records were closed between 1965 and 1968. The FPC refused to grant rate relief for the costs of additional services performed by producers in all of its nationwide rate opinions decided in the 1970's. Thus, even though costs have escalated a great deal in our inflationary economy since the 1960's, producers are still saddled with gathering allowances based on 1960's costs.

Rate relief for the types of costs listed in Section 110(a)(2) of the NGPA was long overdue by the time of enactment of the NGPA, but the Commission still has not moved to implement that section of the statute in any realistic manner. The Commission's original NGPA regulations excluded the filing of any applications for recovery of Section 110 allowances, except as to post-NGPA gas. One and a half years later, in July of 1980, the Commission issued Order No. 94, which expressed an intention to establish generic allowances for gathering and compression of gas, but prohibited the filing of any applications for allowances until completion of the generic proceedings. A small start in the generic cases was made in December, 1980 with issuance of a pre-rulemaking "notice of inquiry." From all outward appearances, the comments filed in response to that notice have been gathering dust for more than a year. The Commission has promised that any allowances ultimately established will be retroactive to July 25, 1980, but it has yet to establish any final Section 110 regulations or to allow any actual collection of increased costs.

In August of 1981, the U. S. Court of Appeals for the Fifth Circuit remanded the case involving the Commission's regulations under Section 110 for further consideration by the Commission. The court required expedited action in the establishment of final regulations for purposes of judicial review, but the Commission has taken no action in the eight months that have passed since then. Applications for special relief might be considered as a possibility, but the Commission has in effect said "don't bother to file." It is continuing to apply an "out-of-pocket cost" test, which means that rate relief will be allowed only if operating costs are not being recovered. This means no recovery if investment or any return on investment, even though recovery of both investment and a reasonable return is basic to the establishment of "just and reasonable rates" under the Natural Gas Act, or to any regulatory scheme.

How has the Commission's failure to implement Section 110(a)(2) of the NGPA affected gas drilling in the United States? There are several effects. Producer-resellers who try to purchase gas for gathering, processing and resale are competitively damaged because they cannot afford to pay prices equivalent to those offered by pipeline companies. The promise of some cost recovery some day, even though retroactive, is no substitute for rates that allow recovery of costs when they are incurred. The competitive disadvantage suffered by "first sale" resellers translates to lower effective wellhead prices where production, gathering and compression costs must all be absorbed within the prices allowed for production of the gas. Drilling which could have been justified at higher effective wellhead prices does not occur or is postponed. In areas not served by a gas gathering system, drilling will not occur or will be postponed, because adequate incentives for installation and maintenance of gathering systems by "first sellers" are not present. In fact, the very uncertainty arising out of the Commission's failure to act also inhibits natural gas development. All of these factors make drilling plans more difficult.

The impact of equitable rate treatment for these types of costs will be far smaller than that of other proposals now being considered affecting interstate gas prices. For many years the Commission has been sending a message to producers that these types of costs should be avoided. Our nation's gas supplies can be exploited more effectively if producers as well as pipeline companies receive reasonable compensation for the installation, operation, maintenance and upgrading of gathering and related facilities. We encourage the Commission promptly to establish reasonable rates for the activities listed in Section 110(a)(2) of the NGPA. It should be understood that that effort involves rate relief long overdue and the alleviation of discrimination between "first sellers" and other purchasers of natural gas. If the Commission continues to ignore this problem, Congress should consider an amendment to Section 110 granting relief or making the duty to establish reasonable rates mandatory.

We at Phillips want to express our appreciation to the Committee for the opportunity to present this statement for the record. We will be happy to furnish additional information on these issues to your Committee at any time.

March 23, 1982

Senate Committee on Energy and Natural Resources
From: Senior Action Coalition, Lorain Co., Ohio

My name is Carol Ganobcik. I am the President of the Senior Action Coalition of Lorain County, Ohio. The Senior Action Coalition represents the more than 30,000 senior citizens living in Lorain County.

Most of the seniors in our area live on fixed incomes and nearly all of them are worried, frightened and angry about what is happening to their heating bills. None of us can even begin to imagine how we would cope with double or triple bills which could result from natural gas decontrol.

Earlier this month the coalition undertook a survey of Lorain County's seniors. The survey represented a random sampling of 225 seniors living in the communities of Lorain, Elyria, Avon, Avon Lake, Oberlin, Wellington North Ridgeville and Amherst.

The results show that:

95% think their gas bills are too high already
99% think that double bills would cause severe financial hardship
98% oppose the decontrol of natural gas

The SAC survey also discovered that the average winter heating bill came to $116.00 a month. A 1981 SAC survey found an average winter gas bill of $82.00. In one year, SAC found a 41% jump in average heating costs.

On March 13, 400 senior citizens attended a SAC sponsored public hearing with our Congressman, Don Pease. The message was clear- seniors can not pay their heating bills now. Seniors strongly oppose decontrol. But we were joined by other members of the community on March 13-churches, hospitals, unions, schools. There was no disagreement on two points- heating prices are too high now, and decontrol of natural gas must not be allowed to happen.

On behalf of Lorain County's seniors and with the concurrence of the rest of the community, I urge every member of this panel to do all in their power to stop decontrol of natural gas and freeze prices.

STATEMENT OF RICHARD F. NELSON
GENERAL MANAGER NATURAL GAS
SHELL OIL COMPANY
SUBMITTED TO THE
SENATE ENERGY AND NATURAL RESOURCES COMMITTEE
APRIL 22, 1982

Thank you for the opportunity to submit this statement on behalf of Shell Oil Company.

Shell is an integrated oil company with annual exploration and production expenditures exceeding $3 billion dollars. About 90 percent of those funds are being spent in the search for and development of oil and gas in the U.S.

Shell is the Nation's sixth largest producer of natural gas, having produced 780 billion cubic feet in 1981. Virtually all of Shell's 1981 natural gas production came from domestic sources. The majority of our production is centered in the offshore Gulf of Mexico, in onshore fields along the Gulf Coast, and in West Texas, Oklahoma, and Michigan.

Shell's focus on domestic investment in exploration and production has allowed it to be successful during the period 1974-1980 in replacing essentially 100 percent of its natural gas production with new reserves.

However, as an active participant in an industry which has been able to replace only about 65 percent of its production since 1974, we are vitally concerned.

Shell wholeheartedly supports the testimony presented by Gene Wright, Chairman of the Natural Gas Supply Association, during this committee's March 23 hearing. The NGPA is simply not working, and something must be done before January 1, 1985, to correct and redirect this Nation's natural gas policy.

The NGPA of 1978 has failed because it was, unfortunately, based on false assumptions. Some of these false assumptions are:

1. That our natural gas resource base is small and, therefore, will not play an important role in our energy future (i.e. we are running out of natural gas).
2. That, given a limited resource base, price incentives for exploration and development should also be limited. Therefore, only a few selected categories of natural gas (out of more than 20 pricing categories) should be phased up to an estimated crude oil equivalent price of $15 per barrel measured in 1978 dollars when these select categories are decontrolled in 1985 (i.e. capture existing supplies at low prices and fix the price for new supplies until 1985 -- rather than let the competitive market set the price).
3. That, having preordained a natural gas shortage, the limited supplies must be allocated and controlled (i.e. the market must be ordered rather than being allowed to function freely).

Testimony given to the Committee on March 23, by Mr. Wright and others, adequately displayed the market disorder (item 3 above) that NGPA created. The purpose of our statement is to amplify Mr. Wright's remarks on the effects of regulation and of deregulation on domestic supplies of natural gas (items 1 and 2 above).

Are we running out of gas? Shell does not believe we are, and our belief is shared by others.

The U.S. Geological Survey has estimated the Nation's remaining undiscovered recoverable natural gas from conventional sources alone to be as much as 730 trillion cubic feet (TCF), enough to last us well into the next century. The Potential Gas Committee, based at the Colorado School of Mines, estimates that current proved reserves plus undiscovered recoverable resources add up to 1,100 TCF of natural gas. This figure approaches twice the volume of gas produced in this country in the past.

The National Petroleum Council has estimated the United States has about 3.2 million square miles of onshore and offshore areas with the potential for oil and natural gas production. The Council added that most of the potentially productive areas have not been adequately explored. For example, only 4 percent of the Outer Continental Shelf has been leased for exploration and development.

Accordingly, if the industry is given proper access to government controlled lands, we should not be concerned about running out of attractive drilling prospects for natural gas soon.

The problem that must finally be solved is - "How can we best convert these natural gas resources into the proven reserves and production that are so vitally needed to strengthen our economy and insure the energy security of this Nation?"

Looking back in recent history, we can develop an appreciation of what will and will not work to correct the devastatingly negative effect of wellhead price controls first imposed in 1954. Specifically, actions taken to control the price of natural gas at the wellhead affect drilling rates and, therefore, production and reserves.

As we approached the early 1970's it became obvious that declining natural gas prices in real terms had caused new gas well completions to essentially level off at less than 4,000 per year. Proven reserves had fallen by one-third, and production was exceeding additions to supply (new reserves) by a factor of two. We were using natural gas twice as fast as we were finding it. This bleak situation caused an increased wellhead price response from the unregulated intrastate market in the early 1970's, which was followed, belatedly, in stair-step fashion for various regions of the country and for various categories of gas in the regulated interstate market. In the unfair competition of unregulated versus regulated market, the intrastate system clearly dominated. Supply surpluses developed in the intrastate market, and severe shortages developed in the interstate system. This competition was clearly terminated and reversed by the NGPA in 1978.

But, wellhead price increases did occur and drilling and new gas well completion rates increased accordingly, particularly in the intrastate system.

During the three-year period (1976 through 1978) before NGPA, new gas well completions climbed above 10,000 per year and were increasing at a rate of 20 percent per year. The decline in reserves was being arrested, and new discoveries and extensions for 1977 and 1978 averaged 16.3 TCF per year based on Energy Information Agency data.

In the first three years following passage of the NGPA (1979 through 1981) gas well completions continued to increase, but at the reduced rate of 11.1 percent per year. In contrast, oil well drilling was increasing at a rate of 29.4 percent per year--or almost three times as fast. New reserve additions from gas discoveries and extensions averaged 14.6 TCF per year in 1979 and 1980. This is a decrease of 1.7 TCF per year from the pre-NGPA period 1977 and 1978.

While it is yet too soon to analyze, the recent sharp decline in drilling rig count in response to lower crude prices has further ominous implications for our domestic natural gas future, as associated gas plays a major role in total reserve additions.

From this slice of wellhead gas pricing history, can we determine if the price incentives of 1970's helped convert natural gas resources into production and reserves? The obvious answer is yes, and a study conducted for Shell by A.T. Guernsey(1) - titled "A Profitability Study of Crude Oil and Natural Gas Exploration and Development in the United States, 1959-1979", quantifies that supply response.

Guernsey finds that during the improved wellhead price response periods of 1972-1980 for natural gas and 1974-1980 for crude oil, 90,600 additional oil wells and 61,200 additional gas wells (over and above historic trends) were drilled and completed in response to higher wellhead prices or expectations. (The analysis excludes wells drilled in North Alaska.) The reserves developed by these additional wells amounted to 33.3 TCF of natural gas and 4.3 billion barrels of crude oil and condensate.

In 1980 alone, the production attributed to these price-induced wells was 2.32 trillion cubic feet of gas and 310 million barrels of liquids. Stated in crude oil equivalent, the added production was 724 million barrels -- or about 2 million barrels per day.

The reserves for these wells at January 1, 1981, amounted to 25.5 TCF of natural gas and 3.4 billion barrels of hydrocarbon liquids.

For the year 1980 alone, we can assume that our payments for foreign oil imports were reduced by $24.6 billion, assuming an average import cost of $34 per barrel. Further, the reserves attributed to these wells at January 1, 1981, of 7.9 billion barrels of crude oil equivalent represents a domestic inventory worth $237 billion at today's cost of $30 per barrel (assumed) for imports.

Not quantified is the effect that 2 million barrels per day of reduced imports has on the world price of crude. Surely the world price would be much higher if demand for OPEC crude were increased by that amount.

(1) A.T. Guernsey, Consultant, Sant Fe, New Mexico--formerly Manager Forecasting, Shell E&P Economics

Shell concludes that the price incentives of the 1970's where translated into real and important supply responses, which strengthened our economy and our national security. And, despite the claims that added revenues flowing to oil and gas producers would be spent on non-energy investments, our analysis shows that monies are being reinvested in energy development at a very high ratio. Some confidence has been restored in the industry that successful risk investment will earn an acceptable rate of return on oil and gas exploration and development.

Having looked at history and concluded that a critical natural gas situation has been somewhat alleviated and that the nation as a whole has benefited significantly from price incentives, can we now assume that nothing more needs to be done?

The answer, of course, is an emphatic no, as testified to by producer, transporter, and user experts on March 23 before this Committee. Much more needs to be done to strengthen the natural gas supply situation. Over the period 1977 thru 1980 that was analyzed earlier, average natural gas production was 18.9 TCF per year. This greatly exceeded the new gas additions over the period. The Nation's proved natural gas reserves at January 1, 1981, amounted to about 200 TCF, or a 10 year supply at current production rates. These reserves will provide only about 10 TCF of production in 1990. About 30 TCF of this reserve is in the Alaskan north slope--unavailable to users. Therefore, our available domestic reserves are only 170 TCF and declining. Natural gas shortages, which already are being evidenced in Louisiana and

Texas, could develop nationwide by the mid-1980's if corrections to NGPA are not made as soon as possible.

Specifically, the NGPA denies industry the capital needed to explore for gas by holding most wellhead natural prices artificially low, well below the cost of alternative energy sources. The pricing policies not only discourage exploration, but encourage inefficient consumption as well. In addition, the NGPA discourages industry from exploring for gas in the most attractive places by placing perpetual price lids on many prospects, especially those under "old leases" in the Outer Continental Shelf and onshore known gas reserves burdened by an "existing intrastate contract" or "committed or dedicated to interstate commerce" on some arbitrary date. Current controls are causing many wells to be prematurely plugged because the operators cannot afford the necessary expense to keep the wells producing. The Natural Gas Supply Association cites, as one example, 14 gas wells whose abandonment would leave an estimated 5.79 billion cubic feet of gas in the ground (the energy equivalent of more than 1 million barrels of oil) -- enough gas to heat more than 55,000 homes for one year. And finally, the NGPA biases the industry's search for gas towards politically popular places. NGPA decontrol of deep gas encourages allocation of capital budgets toward prospects located below 15,000 feet. Not only are these wells the most expensive to drill, but it is estimated by the Colorado School of Mines' Potential Gas Committee that there are fewer resources below 15,000 feet than above. Obviously, any deep reserves found are also the slowest to be developed.

Shell believes there is a clear and significant difference in our future domestic natural gas supply depending upon whether the NGPA scenario or the marketplace scenario prevails. Legislation designed to phase all gas prices over two to three years to market level, and then to remove controls, is vital to our energy future. Absent artificial controls, increased natural gas exploration and development investments would be directed to the lowest cost and most efficient opportunities. This would provide the lowest price in the long-term to consumers and allow natural gas to compete freely with other fuels in the market.

What could be expected in the way of domestic supply response from a total phased decontrol proposal such as that suggested in the Natural Gas Supply Association testimony?

A consensus of most recent studies by experts in academia, government, and business confirm the positive effects that phased decontrol would have on U.S. natural gas output. The benefits include finding new supplies as well as maintaining production from existing fields.

Four studies -- by Standard Oil Company (Indiana), Professor Glenn C. Loury of the University of Michigan, Professor Edward Erickson of North Carolina State University, and the U.S. Department of Energy/Cabinet Council -- have estimated the overall increases in production from phased total decontrol. Their estimates for 1985 alone range from an additional 0.35 TCF to 2.5 TCF (equivalent of 169,000 to 1,208,000 barrels of oil a day). The Erickson study, in particular, estimated that in a case approximating phased decontrol of all gas, increased production from existing wells would mean an additional 1.5 TCF of natural gas in 1985.

Shell has recently modeled the impact of phased total decontrol on the supplies of both oil and gas, and we would like to share our results and conclusions with the committee.

If the NGPA price controls are phased out over a reasonable period of time, such as two or three years, the industry would be able to add at least 600 thousand barrels per day (possibly as much as 1 million barrels per day) of incremental domestic oil and equivalent gas production capacity by 1990. This assumes that the government's share of industry revenues would continue in accordance with current rates of taxation.

The direct effects of decontrol would be to generate additional revenues (or costs to consumers) amounting to some $20 billion per year. About 53 percent of this would flow to the Federal, State, and local governments as royalties, severance taxes, lease bonuses, ad valorem taxes, and income taxes. Private royalty owners would receive about a 6 percent share after taxes. The oil and gas industry's share would amount to roughly $8 billion per year, representing on the order of a 15 percent increase in funds for reinvestment during the next ten years.

Based on our own experience and studies of industry data, we believe that oil and gas producers have a propensity to invest in their business in proportion to the funds provided from current operations. Investment opportunities are available, and technical staff and equipment are sufficient for increased exploration and development activity. Additional funds from gas decontrol would lead to increased investment in oil and gas drilling. Not only could production capacity be increased by as much as 1 million barrels per day in 1990, but domestic developed reserves could be about 3 billion barrels higher in 1990 than would be the case with NGPA. The total amount of incremental additions to developed reserves over the next 10 years (including the amounts produced) could reach 5 billion barrels of crude oil and equivalent natural gas. It is important to recall that oil and gas are intermingled in their occurrence underground and in their discovery and development. It is realistic to assume that the volumes developed as a result of gas price decontrol will, in fact, be crude oil or gas directly displacing like volumes of imports or adding to the country's reserves in the years ahead.

Shell's conclusions and projections (on the surface) appear to be more conservative than some projections by others. Shell's evaluation is more recent and, as a result, reflects the reality of lower crude prices. Additionally, the projections vary to some degree as a direct result of the specific decontrol scenario evaluated.

Market distortions that would arise under the NGPA system after 1985 make it difficult to estimate the incremental effects of a price decontrol proposal. However, in our judgment, residential consumer prices might average about 10 percent higher in 1990 as a result of total decontrol legislation as opposed to the situation with no NGPA revisions.

During the March 22 and 23 hearings of this Committee, user groups repeatedly indicated a concern over adequacy of supply in both the long-term and short-term and expressed a willingness to assume the burden of higher prices to increase security of supply.

In summary, it is historically accurate to state that holding the price of any commodity below its real value will in time bring on shortages. The severe shortages in interstate markets during the winter of 1976-1977 can be traced directly to the Federal Power Commission's "cheap gas" policy during the preceding 15 years. Unfortunately, despite Congress' well intended efforts, the NGPA has not cured the problem. With its bewildering assortment of pricing categories unrelated to the market, the NGPA will itself result in shortages of domestic gas eventually, perhaps as early as 1984. These shortages will be met only at a high cost to our economy and our national security.

A Profitability Study of Crude Oil and Natural Gas Exploration and Development in the United States 1959-1979

This study was prepared by
A. T. Guernsey, Consultant, Santa Fe, New Mexico
on behalf of the Shell Oil Company Exploration and Production Department.

July 1981

Explanation

Previous reports of this series have been issued under the title "Economics of Domestic Crude Oil and Natural Gas Exploration and Development 1959-1976". The first publications — a Technical Paper and an Appendix Volume — were printed in December 1977. An abbreviated and less technical paper was issued in September 1978. A short addendum, including preliminary 1977 and 1978 coverage, was published in June 1979.

The present paper includes final data for 1976-1977-1978-1979. Also some preliminary estimates are included based upon data available thus far for 1980. The profitability calculations in the present paper take into account the Natural Gas Policy Act of 1978, the crude oil price decontrol program, The Windfall Profit Tax Act of 1980, the recent escalations in world crude oil prices, and recent changes in rates of federal income taxation.

The papers of this series are profitability studies, and as such they assess the profitability of the exploration and development investments which are related to the crude oil and natural gas reserves volumes allocated to each year over the 1959-1980 review period.

The papers of this profitability study series are consistent with, but should not be confused with, another recent publication entitled "A Financial Analysis Concerning Conventional Crude Oil and Natural Gas Exploration, Development and Production Activities in the United States 1959-1978." This latter analysis covers the on-going day to day exploration, development, and production crude oil and natural gas field activities as if these activities were carried out by a single establishment and reported separately and annually in a typical shareholder corporate report manner.

Acknowledgement

The various regulatory details associated with crude oil price decontrol, windfall profit taxes, natural gas price control matters and changes in tax rates have added almost immeasurable complications to the profitability studies of the current report. Mr. Dan J. Grimm of the Shell Oil Company Exploration and Production Information Systems Organization has very kindly designed and implemented computer programs which deal with product production volumes, well head values, annual cash flow schedules, and profitability calculations. Because of these contributions, it is believed that the quality and credibility of this work have been improved.

Additional Statistical and Analytical Material

A longer and more detailed volume of same title has been prepared. The longer volume documents the many statistical data series. Also, the patterns of industry behavior which influence the analysis are reviewed. Those who wish to probe deeply into the background should find these additional details helpful. However, the relatively complete shorter paper which follows is generally complete in itself and it should not be necessary for the great majority of reviewers to make reference to the more detailed volume.

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Introduction

The activities, which are the subject of analysis, include exploration, development, and production of crude oil and natural gas in the United States during the 1959-1979 period. In order to carry out the analysis, investigations have been completed concerning: exploration and development investments, reserves and production volumes, well-head prices, production and lease operating costs, income taxes, cash flow, and profitability.

Activities not included above are specifically excluded from the analysis. The excluded activities include: producing property sales and acquisitions, natural gas processing plant operations except for value credited to leases, mining, syn-fuels, petroleum operations downstream from the point of custody transfer of lease production into the transportation system such as transportation, refining, marketing, and chemicals, nonpetroleum diversifications and all research.

North Alaska activities have been excluded from the analysis because: the industry behavior patterns there are not representative of the USA average situation; the North Alaska results during the review period should impact on only a few establishments; and the data required to include these activities are generally not available.

The complete industry data system was used whenever possible. Exploration and development expenditures data are principally from the Joint Association Surveys and the Bureau of Census Surveys of Oil and Gas. Drilling activity data are from the Joint Association Surveys or the American Petroleum Institute and the American Association of Petroleum Geologists reviews of drilling statistics. Crude oil and natural gas reserves volume data are based upon reports of the American Petroleum Institute and American Gas Association reserves committees. Historical well-head prices are from the U.S. Bureau of Mines, the Department of Energy, and the Federal Power Commission. Future well-head prices are based upon crude oil price decontrol, the Windfall Profit Tax Act of 1980, and the Natural Gas Policy Act of 1978. Production and property taxes, operating costs and overheads are from the Joint Association Surveys and the Census Surveys of Oil and Gas. Data pertaining to the income tax calculations are available, for dry holes, from the Joint Association Surveys, for outer continental shelf lease history and surrenders, from the US Geological Survey, and for intangible development expenditures, from the Joint Association Surveys and from special Price Waterhouse tax studies.

Additional areas requiring special investigations and judgements include reserve volume subdivisions between primary and supplemental recovery, schedules of production rates, royalty expenses, and some income tax calculation matters concerning onshore lease disposition, processing of geological and geophysical expenditures, and the selection of depreciation and depletion write-off rates.

Studies such as this are characterized by several important analysis problems. The first is the problem of obtaining an acceptable estimate of ultimate recovery volumes early in the exploration-development-production cycle. The reserve estimates available during exploration are early, but they are uncertain and are almost always revised importantly. Reserve estimates prepared after development drilling has been carried out are much more certain; they require future adjustments for primary recovery revisions and improved recovery programs, which are believed predictable on a statistical basis. Reserve estimates prepared later in the production period are, of course, most accurate but they are not timely. There is a trade-off between the accuracy of a reserve estimate and the time at which it becomes available. The procedures of this study use the reserve estimates which are prepared after development wells have been completed and these estimates are then statistically up graded to provide for primary recovery revisions and improved recovery programs. Although the time of development is the earliest time that acceptable reserve estimates are available, this selection precludes analysis of the profitability of those exploration expenditures which are so recent that development has not occurred.

The second analysis problem concerns properly relating the reserves and production volumes to the specific exploration and development investments which caused those volumes. This is generally because of the long time periods which separate investment expenditures and production. Also indirect costs must be allocated to specific subsequent income streams. Finally, there is the requirement that unsuccessful investments be somehow charged against specific revenues. After investigation of various patterns of industry behavior, it has been concluded that the midpoint of exploration expenditures onshore preceeds the midpoint of development expenditures by about four years. This exploration investment lead time is increased to seven years for offshore. Finally, it is estimated that the improved recovery program development expenditures, for the review period, are time centered five years after the midpoint of primary development.

The third analysis problem concerns the forecasts of the future which are required to complete the profitability calculations. The most uncertain areas, here, are the rates at which well head crude oil prices or production operating costs will rise — relative to the gross national product implicit price deflator series. Also there is uncertainty as to the future of existing natural gas pricing regulations. A less important uncertainty is the magnitude of future improved recovery program expenditures. These matters are examined by means of alternate cases.

The profitability calculations of this review are centered on the crude oil and natural gas reserves volumes whose primary development occurred each year during the 1959-1979 period. Subsequent primary recovery revisions and improved recovery program volumes are also indexed to the year of primary development. The after tax cash flow schedules resulting from the production of reserves indexed to each analysis year are also adjusted for the prior, concurrent, and subsequent exploration and development investments allocated to those reserves. The financial amounts are expressed in terms of 1979 dollars, using the gross national product implicit price deflator series. This permits viewing the financial data in terms of a common unit of measurement. The various profit measures reported in the results include profit, profit as a percent of investment, payout time, and average annual percent real rate of return.

In addition to the profitability results, the study comments on several historical trends including investments, reserves volumes developed, unit investment costs, well completion activities, per well recoveries, well-head prices, lease operating costs, effective income tax rates, and inflation.

The study also includes an estimate of the crude oil and natural gas production response to the recently improved well-head prices. Finally there is included a subdivision of well-head revenues into those portions necessary to permit recovery of operating costs, income taxes, investment, and the portion remaining for profit.

Summary

The real rate of return on the investments associated with the first seven analysis years, 1959-1965, averaged 6.2 percent per annum. For the next five analysis years, 1966-1970, the real rate of return averaged 4.7 percent per annum. For 1966-1970, investment and operating costs generally increased from the earlier period at the same rate as allocated revenues. The profitability reduction for the 1966-1970 period was principally caused by increased income taxation. The real rate of return on investments indexed to analysis years 1971-1979 averaged 8.3 percent per annum. This profitability improvement is because the very significant increases in energy prices have more than compensated for increased investment and operating costs. This improvement has, however, been mitigated somewhat by increased relative income taxation. The higher rates of return have become progressively reduced from about 10 to 7.5 percent per annum during the last five years as the industry has directed its larger investment programs, to an increasing extent, toward smaller objectives — in keeping with the recently improved energy price environment.

The recently increased well-head crude oil and natural gas prices have prompted greatly increased levels of activity. During 1980, gas well completions more than quadrupled those in 1971 and oil well completions were almost triple those in 1973. These increased activities included, perhaps, 61,000 additional gas wells and 91,000 additional oil wells which probably produced about 2 million barrels of crude oil equivalent daily during 1980.

Costs of oil and gas field equipment and services have increased more rapidly than customary measures of inflation, and most importantly so during the last ten years. Also, the improved well-head price situation has resulted in increased activities directed toward smaller objectives. Finally, these improved prices have led to higher justified expenditures for leaseholds. Accordingly, investment levels have increased more rapidly than physical activities and unit exploration and development costs have risen more rapidly during recent years than during the early part of the review period. Annual allocated investments for 1959-1974 generally remained in the $9-11 billion range (1979$) and then increased to $23 billion during 1979. Unit exploration plus development costs increased from just under $2.00 per barrel of crude oil equivalent during the early part of the review period to $2.50 during 1971 and then more rapidly to $6-7 per barrel during 1979 (all 1979$).

Annual crude oil and natural gas reserves additions generally declined from about 6 billion barrels of crude oil equivalent early in the review period to 3 billion barrels during 1973. Since 1973, this long established decline trend in new reserves added has been halted. Most recently, a reversal in trend toward increasing reserves added annually may be developing.

The crude oil price decontrol plan and the recent large increases in world oil price levels have enhanced the profitability of all analysis years' activities. However, the combination of the crude oil price decontrol plan and the Windfall Profit Tax Act of 1980 has not always improved upon profitability as compared to an alternate situation in which crude oil price controls, with no WPT, would have been continued. This is because the imposition of the WPT on stripper oil production has offset the gains from decontrol, with WPT, of nonstripper oil production for eight or nine of the earlier analysis years, and has more than offset these gains for four or five of the more recent analysis years.

For the analyses of this review, the principal effects of the Natural Gas Policy Act of 1978 were the creation of a new onshore gas category for recent development, and the placing of intrastate natural gas under price regulation. Of lesser importance was the creation of a stripper gas production category. The profitability under NGPA has been compared to an alternate situation in which Federal Power Commission interstate gas price controls would have been continued and intrastate natural gas would have remained unregulated. The profitability impact of NGPA was to reduce the real rate of return, on average, about 0.4 percentage points per annum for analysis years 1959-1977 and to improve the real rate of return 0.3 percentage points per annum for analysis year 1978.

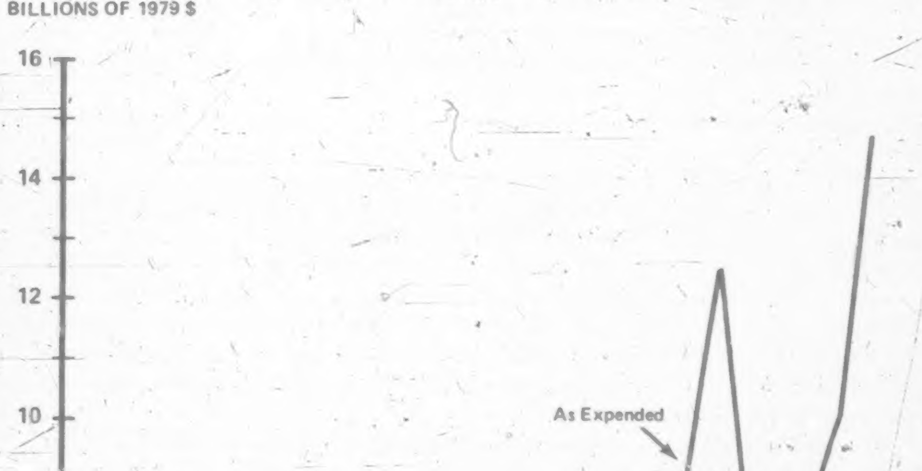
The real rate of return on investments indexed to 1980 is estimated within the range 5.5 to 7.2 percent per annum on a preliminary basis. The higher profitability corresponds to a higher reserve volume which, in turn, represents a significant upturn in the annual rate of reserves development.

1959-1979 Review

A. INVESTMENTS

Annual exploration and development investments (1979 $) are charted on Graphs 1 and 2, according to years of expenditure and also as allocated to years of analysis.

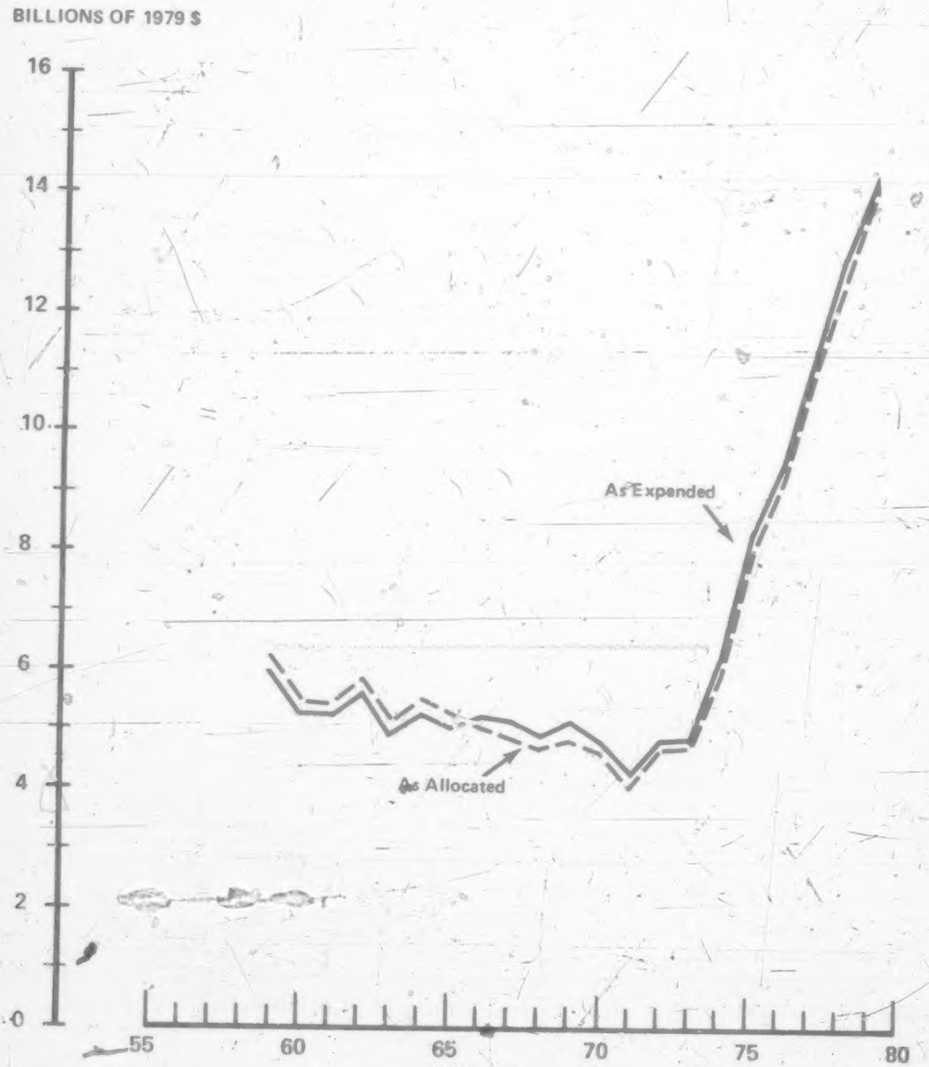
EXPLORATION INVESTMENT EXPENDITURES



GRAPH 1

Exploration expenditures have generally declined from $6 billion during 1955 to $4 billion during 1971. Since 1971, the expenditure level has increased to almost $15 billion during 1979 and has averaged almost $10 billion annually. The increased activities have been prompted by recently improved well-head price expectations. Because of the exploration investment lead times, these increased activities are just beginning to be reflected in the increased allocations for analysis years 1978 and 1979. It is anticipated that exploration investments to be allocated to future analysis years 1980-1983 will average $11-$12 billion annually.

DEVELOPMENT INVESTMENT EXPENDITURES



GRAPH 2

Development investments, as expended or as allocated, have declined from $6 billion for 1959 to $4-$5 billion annually during the early 1970's. Since 1973, the annual development investment levels have increased very rapidly to over $14 billion during 1979. These recent increased investments have been directed principally toward development of a large back log of marginal drilling opportunities which have recently become economic because of improved well-head prices.

Inflation rates, as measured by the gross national product implicit price deflator series, have increased generally over the review period averaging 1.9 percent per annum 1958-1963, 2.7 percent per annum 1963-1968, 5.1 percent per annum 1968-1973, 7.3 percent per annum 1973-1978, and 8.6 percent during 1979. However, the costs of most oil country goods and services have increased more rapidly. This has caused considerable cost escalation to remain in the investment data, even after converting to 1979 constant dollars. Accordingly, physical activity has not been maintained or increased to the extent suggested by the investment levels discussed above. Slightly over half of exploration and development expenditures has been in the drilling category. Table 1 lists some selected economic indexes on the basis of 1959 equals 100, and shows that drilling costs have increased much faster than the GNP deflator series.

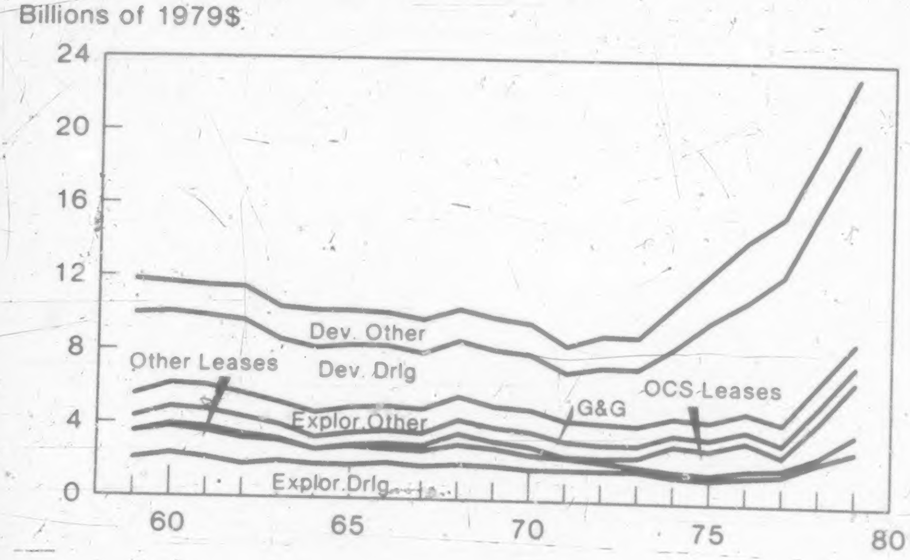
TABLE 1

SELECTED ECONOMIC INDEXES
1959 = 100

		Per Well Drilling Costs			Average USA Well-Head Prices				
Year	*GNP Implicit Price Deflator*	*Oil Wells*	*Gas Wells*	*Dry Wells*	*Crude Oil*	*Natural Gas*	*Average Per Well Operating Costs*	*Petroleum Hourly Wages*	*Const Machinery and Equip*
1959	100	100	100	100	100	100	100	100	100
1964	108	97	104	113	99	119	104	112	109
1969	128	166	153	163	107	130	145	140	131
1974	170	212	188	330	232	236	249	197	181
1979	241	468	440	790	436	913	504	312	305

Outer continental shelf lease acquisition costs have also increased over the review period more rapidly than the GNP price deflator. These expenditures, in 1979 $ per acre leased, have averaged as follows: $638 during 1954-1964, $2,259 during 1965-1969, and $2,644 during 1970-1979. This increase is believed principally related to the adverse imbalance between the need for and availability of OCS leases and the improved wellhead price expectations which are, of course, factored into the successful lease bonus bids.

Graph 3 shows the exploration and development investments according to analysis years and subdivided by expenditure categories. Total investment has declined from $12 billion allocated to 1959 to $9 billion allocated to 1973. The allocated investments have since increased to $23 billion for 1979. The surge in development investments started in 1974 immediately after the Arab embargo, while the surge in allocated exploration investments



INVESTMENT ACCORDING TO ANALYSIS YEAR

GRAPH 3

(because of the investment lead time) did not not commence until four years later in 1978. The exploration and development allocated investments have been subdivided according to expenditure category as summarized below:

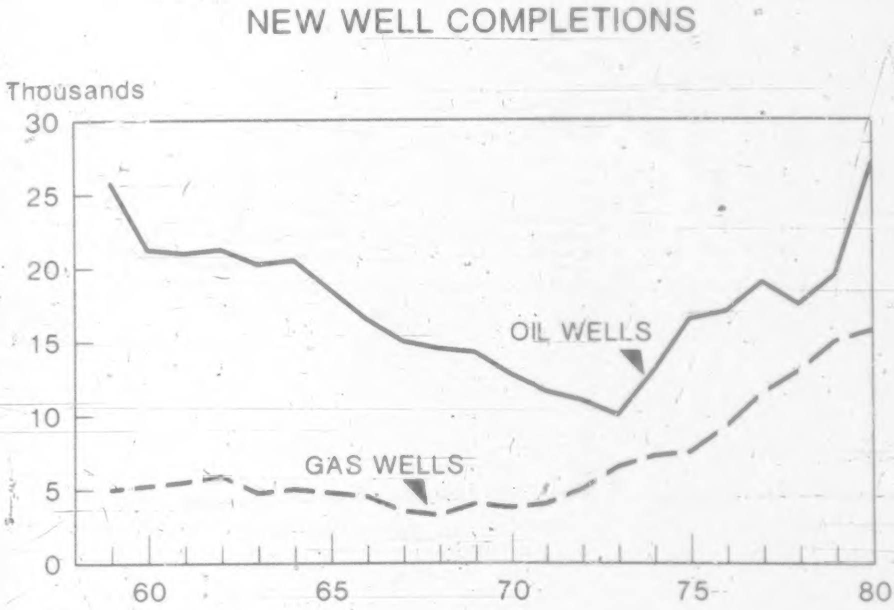
TABLE 2

EXPLORATION AND DEVELOPMENT INVESTMENTS CATEGORY PORTIONS

	1959-1973	1974-1979
Exploration drilling	.19	.12
OCS leases	.02	.10
Other leases	.09	.02
Geological & Geophysical	.08	.04
Other	.12	.07
Subtotal Exploration	.50	.35
Development drilling	.33	.46
Improved recovery programs	.02	.02
Other	.15	.17
Subtotal Development	.50	.65
Total	1.00	1.00

B. DRILLING ACTIVITY AND PETROLEUM RESERVES DEVELOPED

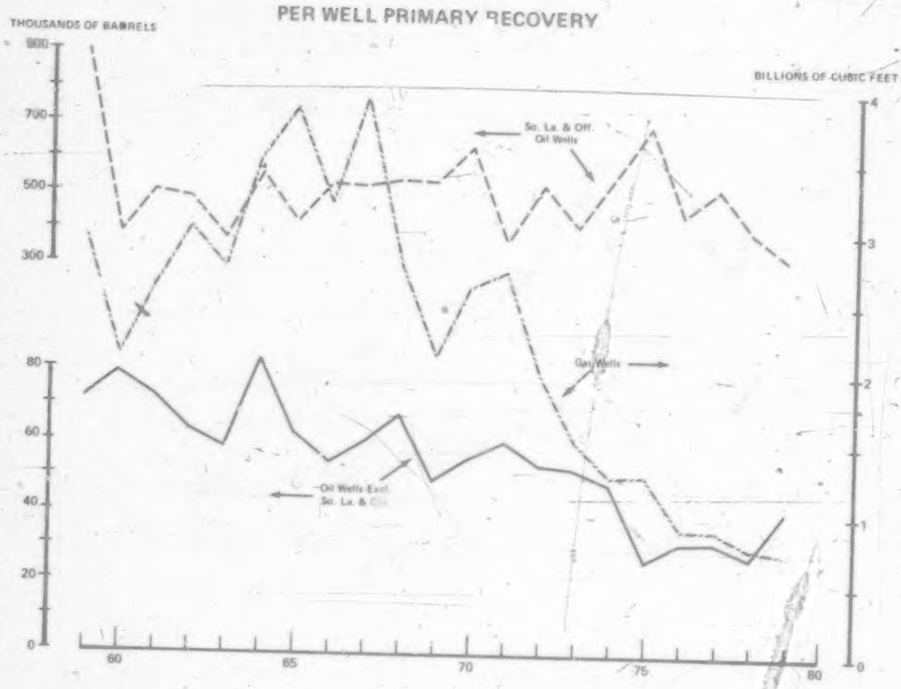
As indicated by Graph 4, oil well completion activity generally declined over the first three quarters of the review period from almost 26,000 new oil wells in 1959 to less than 10,000 new oil wells in 1973. Since 1973, oil well completions have increased markedly, reaching almost 27,000 during 1980. This increased activity has been carried out in response to the improved well-head price situation which has prevailed since 1973.



GRAPH 4

Primary ultimate recovery per new oil well drilled has been generally maintained at about 500,000 barrels for oil wells in South Louisiana (including offshore). However, the per well recovery trend for these wells, as charted on Graph 5, has declined most recently. South Louisiana (including offshore) has accounted for less than five percent of the new oil wells completed during 1959-1979. Elsewhere in the United States, primary ultimate recovery per new oil well drilled has declined from about 80,000 barrels early in the review period to 53,000 barrels in 1973. Since 1973, per well primary ultimate recovery has averaged only 34,000 barrels.

Gas well drilling activity has declined more slowly from 5,000 new wells in 1959 to 3,800 in 1971. Since 1971, gas well completion activity has increased to record levels, reaching 15,700 new completions in 1980, as shown on Graph 4. Graph 5 indicates that gas well recovery generally averaged 2.9 billion cubic feet per well over the 1959-1971 period. Subsequently, the per well recoveries have declined from 2.7 billion cubic feet in 1971 to 0.7 billion cubic feet in 1979.


PER WELL PRIMARY RECOVERY

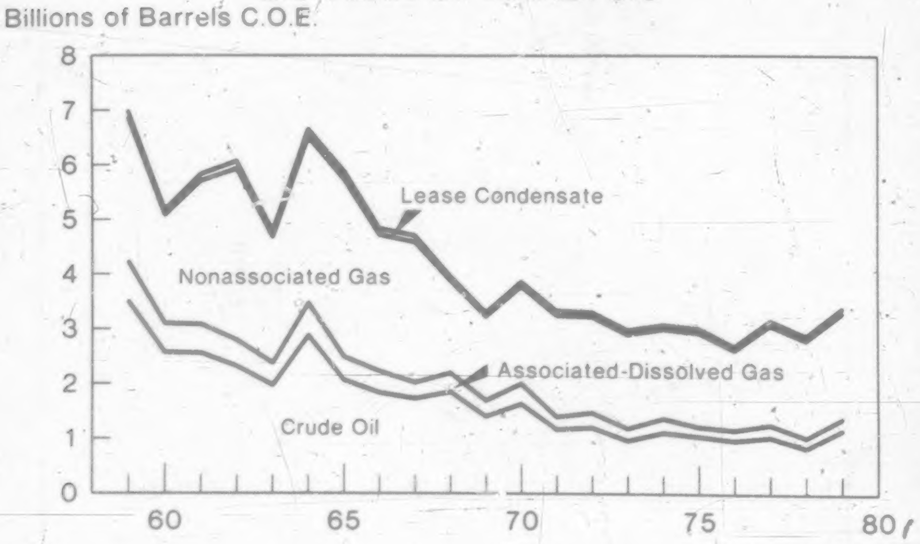
GRAPH 5

The petroleum reserves allocated to each analysis year include the crude oil primary recovery volumes developed by drilling that year and additional reserves from improved recovery programs. These additional crude oil reserves average 28 percent of the primary oil recovery volumes. Associated and dissolved natural gas is considered as a coproduct with the crude oil. The nonassociated natural gas from the gas wells drilled during the analysis year contains lease condensate as a coproduct. All four of these hydrocarbons have been stated in terms of energy equivalence and added to obtain the total reserve amounts allocated to each analysis year. The totals are expressed in billions of barrels of crude oil equivalent (5,604 cubic feet of natural gas is equivalent to one barrel of crude oil).

Graph 6 shows the hydrocarbon reserves as allocated to the analysis years and subdivided according to hydrocarbon category. The rate of reserves development was somewhat uniform during 1959-1965. The data for analysis years 1966-1973 indicate a fairly uniform decline in the reserves development rate. Since 1973, this decline has been halted and the more recent data may indicate a reversal to increasing rates of reserves development.

For the entire twenty-one year review period, the volumes have been split 48 percent into the oil field category (crude oil and associated — dissolved natural gas) and 52 percent into the gas field category (nonassociated natural gas and lease condensate). The product subdivisions have averaged 42 percent crude oil and lease condensate and 58 percent natural gas.

HYDROCARBON RESERVES DEVELOPED BY YEAR OF ANALYSIS



GRAPH 6

Coproduct to principal product ratios have averaged 1149 cubic feet of associated — dissolved natural gas per barrel of crude oil and 8.4 barrels of lease condensate per million cubic feet of nonassociated natural gas.

C. DOMESTIC SUPPLY RESPONSE TO IMPROVED WELL-HEAD PRICES

An analysis has been carried out concerning trends (such as those on Graphs 4, 5, and 6) of well completions and primary reserves developed. Crude oil development activities since the well-head price increases in late 1973 and the nonassociated natural gas development activities since the beginning of the rise in contract prices, intrastate, in early 1972 were examined. These activities were subdivided into the portion which could be projected by continuation of historical trends and into the portion which was prompted by the higher well-head prices or expectations. It was assumed that those portions of total activities which could not be attributed to a continuation of historical levels or trends should be considered as activities carried out in response to the improved well-head prices. This subdivision is summarized below:

TABLE 3

CRUDE OIL AND NONASSOCIATED NATURAL GAS DEVELOPMENT ACTIVITIES

	New Wells	*Primary Ultimate Recovery*	
		Total	*Per Well*
Crude Oil 1974-1980	(M)	(MMMB)	(MB)
Historical Trend Portion	38.4	2.6	67
Price Response Portion	90.6	3.2	35
Nonassociated Natural Gas 1972-1980	(M)	(TCF)	(MMCF)
Historical Trend Portion	28.8	58.6	2032
Price Response Portion	61.2	28.9	471

90,600 oil wells and 61,200 natural gas wells have been drilled in response to the improved well-head prices as indicated by Table 3. The primary ultimate recoveries indicated on the table should be increased to allow for improved crude oil recovery programs. Also, associated — dissolved natural gas and lease condensate coproduct volumes should be accounted for. A portion of the reserve volumes has been produced during the 1972-1980 period and a portion remains unproduced on January 1, 1981. The volume accounts are estimated below:

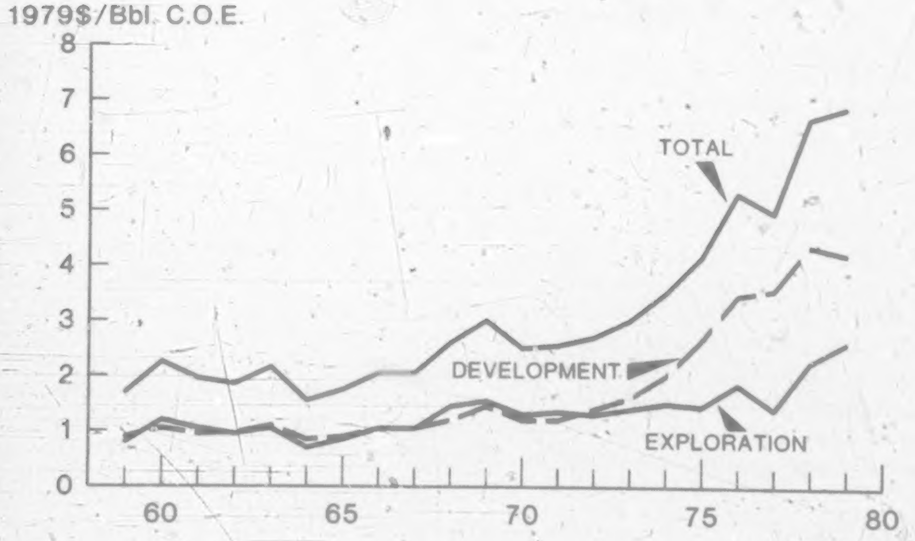
TABLE 4

RESERVES DEVELOPED IN RESPONSE TO IMPROVED WELL-HEAD PRICES

	Reserves Developed	*Production 1972-1980*	*Remaining Reserves at 1/1/81*
Crude oil - primary (MMMB)	3.2	0.9	2.3
Crude oil - supplemental (MMMB)	0.9	—	0.9
Assoc. - Diss. Natural Gas (TCF)	4.4	1.3	3.1
Nonassoc. Natural Gas (TCF)	28.9	6.5	22.4
Lease Condensate (MMMB)	0.24	0.05	0.19
Total Hydrocarbons (MMMBCOE)	10.2	2.3	7.9

Production from the reserve volumes on Table 4, during 1980, is estimated as 294 MMB crude oil, 16 MMB lease condensate, 408 BCF associated — dissolved natural gas and 1912 BCF of nonassociated natural gas for a total of 724 MMB crude oil equivalent. The 1980 production resulting from the price response activities thus averaged 1.98 MMB COE daily.

UNIT INVESTMENT COSTS



GRAPH 7

D. UNIT INVESTMENT COSTS

Unit exploration and development costs are the ratios of the allocated investments (Graphs 1 and 2) and the allocated reserve volumes (Graph 6) for each analysis year. The unit costs are expressed in terms of 1979 dollars per barrel of crude oil equivalent and are charted on Graph 7. During the first nine years of the review period, unit exploration and development costs remained generally constant and equal to each other at the $0.95 per barrel COE level. During the next six years 1968-1973, the two cost indexes were generally equal to each other and averaged $1.35 per barrel COE each. Since 1973, unit development costs have escalated sharply to $4.22 per barrel COE, reflecting the lower caliber of development activities which have been carried out since 1973. For the first four years after 1973, the unit exploration costs averaged $1.55 per barrel COE. Unit exploration costs for analysis years 1978 and 1979 then increased to $2.30 and $2.60 per barrel COE reflecting the sharp increases in exploration expenditures which began during 1973 and 1974.

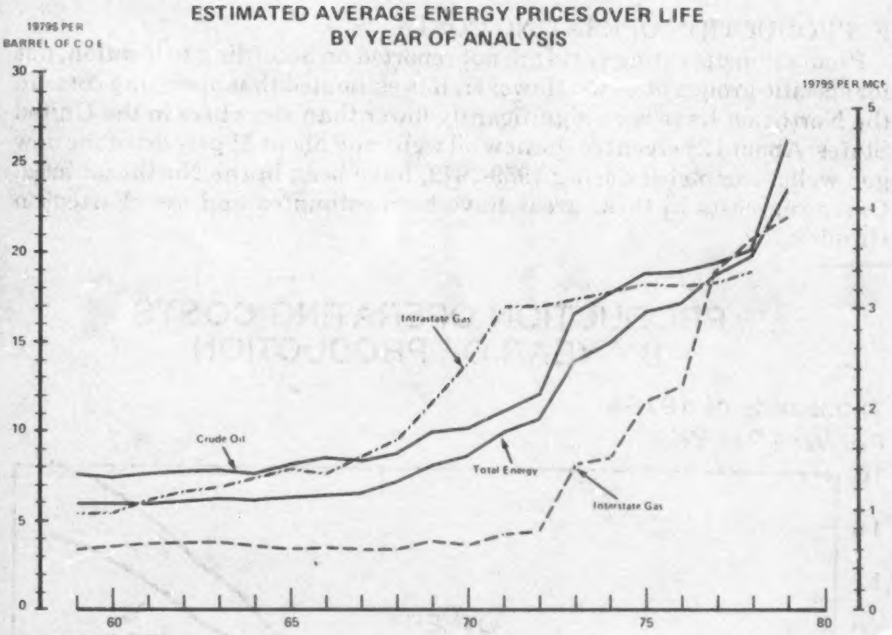
E. ESTIMATED AVERAGE ENERGY PRICES OVER PRODUCING LIFE

The estimated average total energy prices over producing life are the weighted composites of the crude oil prices and the natural gas prices (both interstate and intrastate sales).

Annual production schedules over life were prepared for each hydrocarbon product and for each analysis year's group of activities. These schedules are based upon the production proration regulations, initial natural gas contract sales rates, well capacities, estimated production decline rates, and lease operating cost limitations.

Annual unit well-head price schedules over life were prepared for crude oil, interstate natural gas and intrastate natural gas production. The crude oil price schedules are based upon average USA prices through 1973, the ceiling prices for lower tier, upper tier, and stripper crude oil production during 1974-1980, the phased decontrol of crude oil prices during 1979-1980, and an average USA decontrolled well-head price of $32.73 per barrel after 1980 (1979 dollars). The estimated windfall profit taxes during 1980-1993 have been deducted from the price schedules. An alternate case considers a future escalation or rise in the real decontrolled crude oil price.

The unit price schedules for interstate natural gas production from reserves developed prior to 1973 were controlled by area rate ceiling prices through production year 1975. Thereafter, these older volumes are limited to the old gas prices. These prices can be increased to the interstate roll-over rate upon expiration of contract. The natural gas volumes developed during 1973-1974 are principally controlled on an intermediate gas basis, while the natural gas developed during 1975-1976 is regulated on a post-1974 gas basis. This latter category would also include most all offshore volumes developed during 1977-1978-1979. Generally, all of the volumes discussed above are to be regulated throughout remaining life with scheduled price escalations according to the Natural Gas Policy Act of 1978 (NGPA). The


ESTIMATED AVERAGE ENERGY PRICES OVER LIFE BY YEAR OF ANALYSIS

GRAPH 8

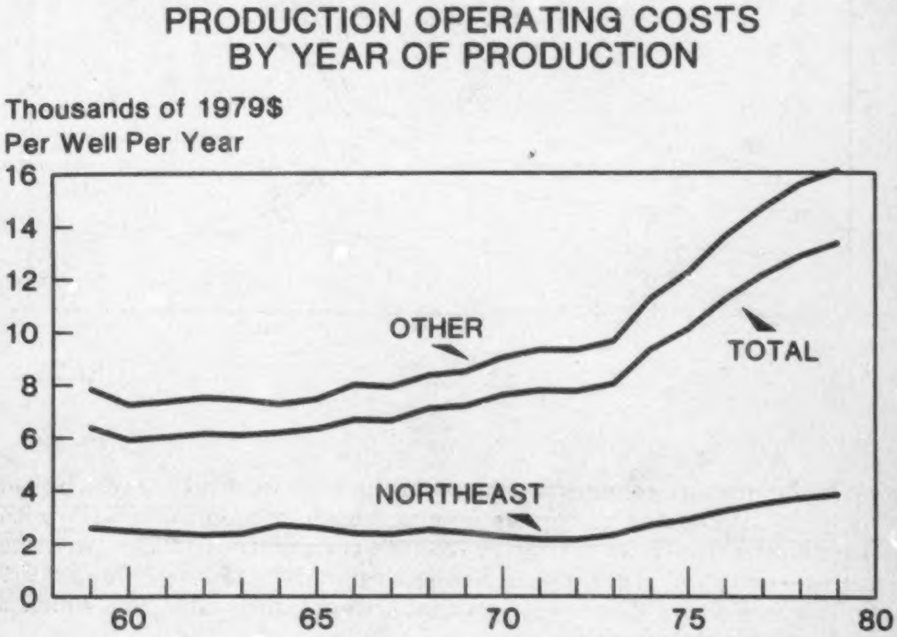
prices for onshore volumes developed during 1977-1978-1979 are controlled by the NGPA as new gas or gas from new onshore production wells with deregulation scheduled during the 1985-1987 period. The well-head average price for deregulated natural gas has been estimated as $6.20 per MCF (1979 $). The NGPA provides for a stripper gas price category, after 1978, which is higher than any other price category.

Intrastate natural gas initial contract prices, as determined in a free market, began to exceed interstate initial rates by 1971. Intrastate natural gas sales contracts negotiated after 1964 included rate protection provisions to an increasing extent and it is believed that almost all intrastate contracts negotiated from 1970 onward contained these provisions. The NGPA provides for an intrastate roll-over price, when contracts expire, almost twice as high as the similar ceiling for interstate natural gas. NGPA also provides for decontrol of most all intrastate natural gas in 1985 if permitted by definite provisions in the contract. This limitation could delay complete deregulation until expiration of existing contracts containing indefinite pricing provisions. It is estimated that about 36 percent of natural gas developments prior to 1971 were committed to the intrastate market, and that this intrastate share gradually grew to 60 percent by 1976-1977-1978. After 1978, there is no differentiation between intrastate and interstate new gas developments.

Graph 8 shows the estimated average prices over producing life for each hydrocarbon product and for each analysis year's group of activities. The average prices are shown in terms of 1979 er barrel C.O.E. or per MCF.

F. PRODUCTION OPERATING COSTS

Production operating costs are not reported on according to location, nor for specific groups of wells. However, it is estimated that operating costs in the Northeast have been significantly lower than elsewhere in the United States. About 12 percent of the new oil wells and about 31 percent of the new gas wells, completed during 1959-1979, have been in the Northeast area. Operating costs in these areas have been estimated and are charted on Graph 9.



GRAPH 9

The base case presumption is that 1979 operating cost levels will continue after 1979 when measured in constant dollars. An alternate case will examine a future escalation or rise in the real operating cost levels.

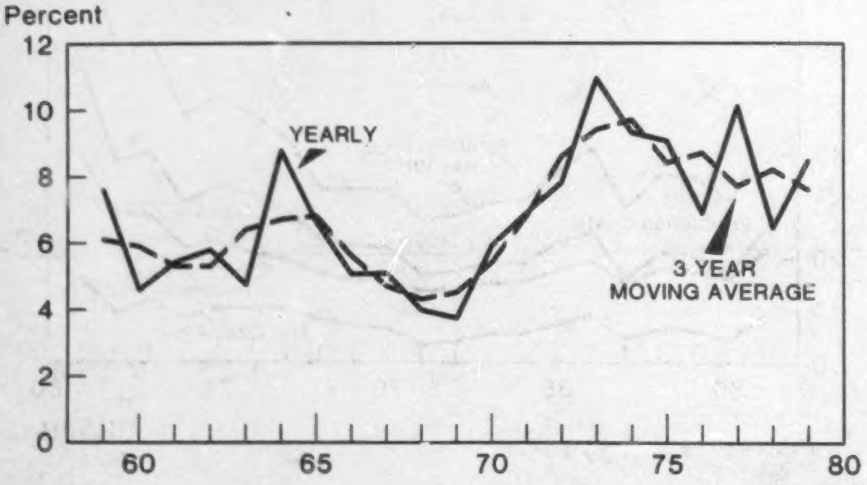
G. PROFITABILITY

An after-tax cash flow analysis has been completed for the activities indexed to each analysis year. The average annual real rates of return (in excess of inflation as measured by the GNP implicit price deflator) on the investments for each analysis year have been determined, using discounted cash flow procedures. The results are charted on Graph 10, on a yearly and on a three-year moving average basis. The three-year moving averages are weighted according to the undiscounted investments.

The real rate of return averaged 6.2 percent per annum for analysis years 1959-1965 and 4.7 percent per annum for analysis years 1966-1970. Although the real rate of return averaged 8.3 percent per annum for analysis years 1971-1979, it has trended downward since 1973-1974.

The earning rates are generally higher than reported in earlier studies of this series, and especially so for the later analysis years. This is principally because of provision in the current study for the crude oil price decontrol plan and the recent very large increases in world oil price levels. In addition, this study incorporates the effects of the Natural Gas Policy Act of 1978 and the Windfall Profit Tax Act of 1980. Some of these effects impact on almost all analysis years such as the provision for a stripper gas price category, the provision for an intrastate roll-over gas price category, the eventual decontrol of almost all intrastate natural gas, the rapid decontrol of crude oil prices, and the recent escalation of world crude oil prices. Other effects impact only on the more recent analysis years such as the eventual decontrol of natural gas prices for onshore interstate reserves developed during 1977-1978-1979, and the price escalations, under controls, for this same gas.

AVERAGE ANNUAL REAL RATE OF RETURN
BASE CASE BY YEAR OF ANALYSIS



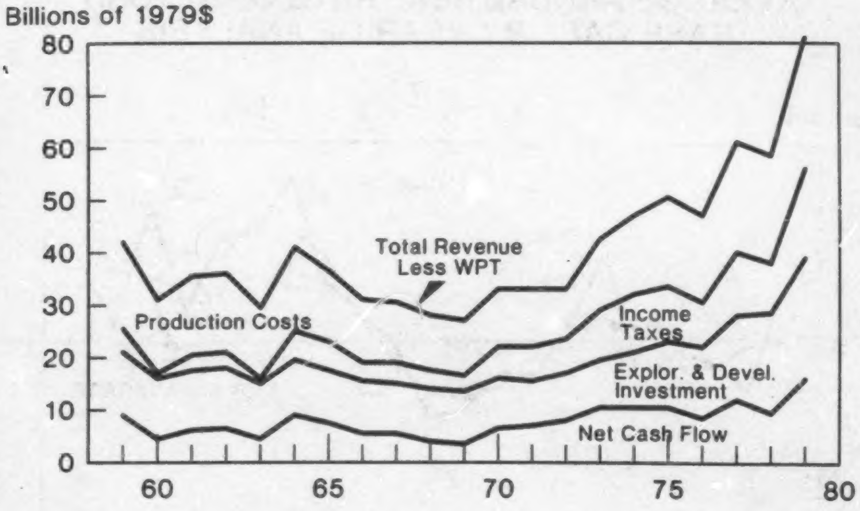
GRAPH 10

The annual earning rates of the current study are higher than those estimated earlier by an average 0.6 percentage points for the first six analysis years 1959-1964; by an average 1.9 percentage points for the next six analysis years 1965-1970; and by an average 2.8 percentage points for the next six analysis years 1971-1976. The comparisons for analysis years 1977 and 1978 are almost without basis because of the numerous recent developments which impact heavily on analysis years after 1976. The 1977-1978 activities, which previously appeared to have poor profitabilities, now appear to be quite satisfactory pieces of business. Profitability for analysis year 1979 has not been previously estimated.

H. CASH FLOW

Graph 11 summarizes the cash flow calculations for each analysis year. The data are expressed in billions of 1979 dollars. The uppermost line is well-head revenue less windfall profit tax. The first cash flow element to be subtracted is production costs consisting of lease operating expenses, associated overheads, royalty, severance taxes, and ad valorem taxes. The central two lines on the chart are operating cash income before or after income taxes. The next subtrative cash flow element is the exploration and development investment total, which leaves the lowermost line and increment for net cash flow or profit. Most of the financial measures have trended downward when activities indexed to analysis years 1959-1969 are compared, and upward for the later group of analysis years 1969-1979.

CASH FLOW SUMMARY OVER LIFE
BASE CASE BY YEAR OF ANALYSIS



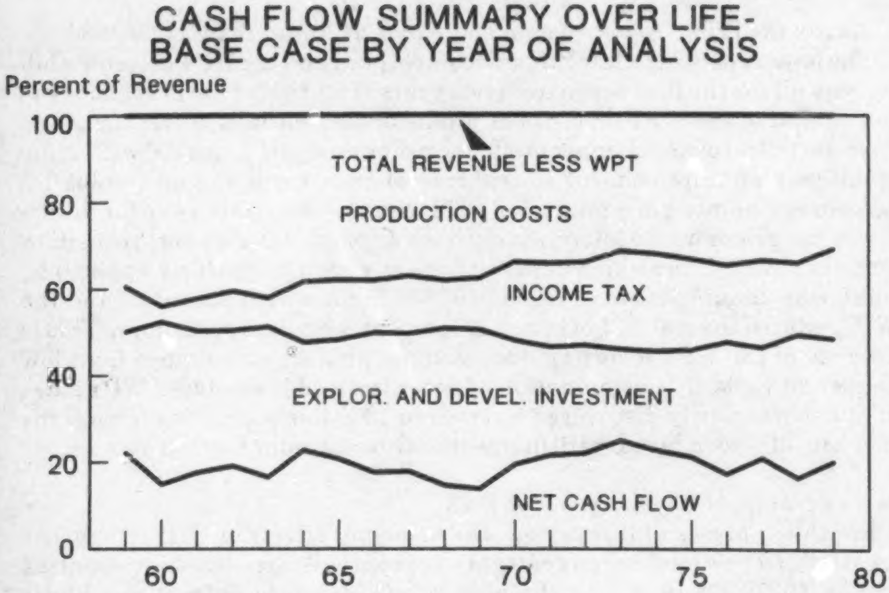
GRAPH 11

Graph 12 is a rearrangement of the Graph 11 data on the basis of percents of well-head revenues less WPT.

Production costs declined across the review period from 40 percent to 30 percent of revenue less WPT, indicating that lease operating costs and overheads have not increased as rapidly as revenue less WPT as the analysis years have become more recent.

Income taxes have increased from 10 percent to 20 percent of revenue less WPT. This is partially caused by the increasing impact of the phase-out of the percentage depletion allowance on the more recent analysis years.

Production costs and income taxes have consumed about one half of revenue less WPT (from 48 to 54 percent). The other half is subdivided into the portion necessary to recover investment and the portion remaining as net cash flow or profit. This latter subdivision impacts directly on the rate of return measure. For instance, total investment ranged between 21 percent



GRAPH 12

of revenue less WPT for analysis year 1973 when the real rate of return averaged 10.9 percent per annum to 36-37 percent for analysis years 1960, 1968, 1969 when the real rate of return was in the 3.7-4.6 percent per annum range.

I. EFFECTIVE INCOME TAX RATES

Effective income tax rate is defined as the ratio of income taxes paid to net cash flow, or profit, plus income taxes paid.

This rate has increased from 30 percent for the first five analysis years, to 40 percent for the next five years, to 47 percent for the next five years, and to 50 percent for the most recent six analysis years. This increase is partially caused by the increasing impact that the loss in percentage depletion allowance has had on the more recent analysis years.

Investment tax credits have served to reduce the effective tax rate, and this reduction has ranged from nil up to 2.6 percentage points.

The inflationary erosion of the tax deductions, which are deferred until some years after expenditure, serves to increase effective tax rates, in a constant dollar analysis. This increase has equaled 4-5 percentage points in some cases.

In the base case, state income taxes have been assumed to average 2 percent of federally taxed income, which effect is after deduction of state taxes from federally taxed income.

J. OTHER CASES

The impacts of some changes in single premises upon profitability have been estimated. These are simple sensitivity calculations; they are not presentations of complete scenarios.

1. *Crude Oil Price Decontrol and The Windfall Profit Tax Act Of 1980*

The impact of the crude oil price decontrol plan and the WPT on profitability was nil for the first seven analysis years 1959-1965. This is because the imposition of the WPT on stripper production essentially offset the gains from decontrol of nonstripper production. For analysis years 1966-1972, the result was an improvement in real rate of return ranging up to plus 1.5 percentage points per annum for 1972, the last analysis year for which lower tier prices would alternatively have applied. After a short transition period 1973-1975, for which upper tier prices were alternatively applicable, there was an analysis year period 1976-1978 for which decontrol and the WPT reduced the real rate of return 0.7 percentage points per annum. This is because of the WPT levied against stripper production volumes from low caliber oil wells. The combination of decontrol and the reduced WPT rates applicable to newly discovered reserves in 1979 has served to increase the real rate of return by 1.6 percentage points per annum for that year.

2. *The Natural Gas Policy Act of 1978*

For the analyses of this review, the principal effects of NGPA were the creation of a new onshore gas category appropriate to reserves development during 1977-1978-1979, and the placing of intrastate natural gas under regulation. Of lesser importance was the creation of a stripper gas production category.

The impact of the NGPA on profitability for most analysis years was to reduce the real rate of return, on average, about 0.4 percentage points per annum. For analysis year 1978, the impact was to increase the real rate of return 0.3 percentage points per annum. No comparison was made for analysis year 1979.

3. *Increased Well Head Prices*

If decontrolled crude oil prices should increase 2 percent per annum faster than the GNP deflator index, instead of at the same rate, the real rate of return increases by nil for analysis year 1959 to 0.4 percentage points per annum for analysis year 1979.

4. *Increased Lease Operating Costs*

If lease operating costs rise 2 percent per annum in real terms, instead of just keeping pace with inflation, the real rate of return decreases by nil for analysis year 1959 to 0.2 percentage points per annum for analysis year 1979.

5. *Analysis Year 1980 (Preliminary)*

Investments to be allocated to analysis year 1980 are estimated at $11.0 billion for exploration and $17.9 billion for development, for a total of $28.9 billion (1979 $). Reserve volumes to be allocated to 1980 are preliminarily estimated to range between 3.4 and 3.9 billion barrels COE. The average annual real rate of return for 1980 indexed activities is estimated to range between 5.5 percent and 7.2 percent. The higher profitability level corresponds to the higher reserve volume which, in turn, represents a significant upturn in the annual rate of reserves development.

K. CONCLUSIONS

1. The industry activity response to the improved well-head prices was immediate. Exploration expenditures and drilling activity increased sharply, reversing established downward trends existing for fifteen or more years.

2. Gas well completions in 1980 more than quadrupled those in 1971 while oil well completions in 1980 were almost triple those in 1973. Increased activity, prompted by the improved economics, included an estimated 61,000 gas wells and 91,000 oil wells during the periods just mentioned.

3. These increased activities have added an estimated two million barrels of crude oil equivalent to daily production in 1980. This production increment has been built up gradually and has amounted to 2.3 billion barrels during 1972-1980.

4. The steady decline in the rate of reserves additions, existing since 1964, was halted after 1973; a new upward trend in annual reserves additions is apparently beginning. Of the 10 billion barrels of crude oil equivalent new reserves attributed to the price response activity, 8 billion barrels remain to be produced after 1980.

5. The improved well-head prices have impacted most on the profitability of the more recent activities. Based upon current economics, it is estimated that the industry average real rate of return is 6.2 percent per annum for activities indexed to 1959-1965, 4.7 percent per annum for 1966-1970, and 8.3 percent per annum for 1971-1979. This profitability measure has trended downward recently from 10 percent for 1973-1974 to 7.5 percent for 1978-1979.

6. The recent public policies, including the crude oil price decontrol program (with WPT) and the Natural Gas Policy Act of 1978 have not always served to improve on well-head realizations. Stripper oil production, even though previously decontrolled, became subject to WPT. NGPA placed intrastate natural gas under regulation.

7. Effective income tax rates, when measured on a real basis, have increased from 30 percent for activities indexed to the earlier analysis years to 50 percent for the more recent activities, principally because of the increasing impact of the loss of the percentage depletion provision on the more recent activities. The investment tax credit has reduced the more recent effective tax rates about 2 percentage points. However, the inflationary erosion of tax write-offs deferred many years after expenditure has caused real tax rates to exceed the statutory rates by 4-5 percentage points.

8. Cost inflation in the oil and gas business has exceeded that indicated by customary inflation measures, and especially during the last ten years.

While the gross national product implicit price deflator was increasing 6.5 percent per annum during 1969-1979, the following average annual percentage increases in oil country costs were being recorded: oil wells 10.9, gas wells 11.1, dry holes 17.0, per well lease operating costs 13.3, petroleum wages 8.3, and construction machinery and equipment 8.8.

9. The impact of uncertainty about future world crude oil prices on the profitability of historic investments will be mitigated by the fact that only 36 percent of recent reserve additions are crude oil and by the workings of the Windfall Profit Tax Act. If future decontrolled oil prices rise 2 percent per annum faster than inflation, instead of with inflation, the average annual real rate of return for recent activities would improve 0.25-0.40 percentage points.

10. The very large recent exploration expenditures will be allocated to the analysis years just ahead. Assuming continuation of current economics, reserve additions must increase significantly in the very near future to avoid a serious decline in profitability levels.

EXPLORATION AND DEVELOPMENT INVESTMENT EXPENDITURES
MM 1979 $

Year	*Exploration*		*Development*	
	As Expended	*As Allocated*	*As Expended*	*As Allocated*
55	5,853			
56	6,023			
57	5,822			
58	5,407			
59	5,289	5,560	5,554	6,249
60	5,313	6,150	5,291	5,513
61	4,859	6,048	5,242	5,458
62	5,846	5,633	5,6[illegible]	5,805
63	4,606	5,169	4,971	5,195
64	5,199	4,642	5,275	5,562
65	4,690	4,931	5,048	5,267
66	4,911	5,015	5,275	5,087
67	5,324	4,894	5,171	4,867
68	6,553	5,584	4,961	4,751
69	3,862	5,077	5,161	4,813
70	4,223	4,926	4,838	4,680
71	3,965	4,355	4,295	4,064
72	5,887	4,247	4,857	4,740
73	9,003	4,153	4,878	4,802
74	12,464	4,613	6,249	6,114
75	7,232	4,449	8,363	8,045
76	8,711	4,961	9,413	9,323
77	8,540	4,414	11,319	11,182
78	10,031	6,603	13,007	12,637
79	14,638	8,802	14,361	14,389
80		11,004		
81		11,139		
82		11,877		
83		12,123		

Table A
Data For Graphs 1 and 2

VARIOUS OIL & GAS FIELD RELATED INDEXES, COSTS, VALUES OVER 1959-1979 PERIOD

Year	*GNP Deflator (1979 = 1.00)*	*Per Well Drilling Costs M$*			*Well Head Unit Values*		*Production Operating Costs ($/Well/Yr)*	*Average Hourly Earnings Petroleum & Coal Products ($/Hr)*	*Const. Mach. & Equip. (1967 = 100)*
		Oil Wells	*Gas Wells*	*Dry Holes*	*Crude Oil $/B*	*Natural Gas $/MCF*			
1959	.415	52.0	100.8	43.0	2.90	.129	2,648	2.85	84.1
1960	.422	52.2	102.7	44.0	2.88	.140	2,496	2.89	85.9
1961	.426	51.3	94.7	45.2	2.89	.151	2,565	3.01	87.3
1962	.434	54.2	97.1	50.8	2.90	.155	2,653	3.05	87.6
1963	.444	51.8	92.4	48.2	2.89	.158	2,703	3.16	89.0
1964	.447	50.6	104.8	48.5	2.88	.154	2,760	3.20	91.2
1965	.457	56.[illegible]	101.9	53.1	2.86	.156	2,890	3.28	93.6
1966	.472	62.2	133.8	56.9	2.88	.157	3,146	3.41	96.5
1967	.485	66.6	141.0	61.5	2.92	.160	3,214	3.58	100.0
1968	.507	79.1	148.5	66.2	2.94	.164	3,592	3.75	105.7
1969	.533	86.5	154.3	70.2	3.09	.167	3,828	4.00	110.4
1970	.561	86.7	160.7	80.9	3.18	.171	4,256	4.28	115.9
1971	.590	78.4	166.6	86.8	3.39	.182	4,578	4.57	121.8
1972	.614	93.5	157.8	94.9	3.39	.186	4,753	4.93	125.7
1973	.649	103.8	155.3	10[illegible]	3.89	.216	5,205	5.21	130.7
1974	.706	110.2	189.2	141.7	6.74	.304	6,583	5.61	152.3
1975	.771	138.6	262.0	177.2	7.67	.445	7,777	6.42	185.2
1976	.811	151.1	270.4	190.3	8.19	.580	9,099	7.14	198.9
1977	.859	170.0	313.5	230.2	8.57	.790	10,423	7.83	213.5
1978	.921	208.0	374.2	281.7	9.00	.905	11,837	8.63	232.9
1979	1.000	243.1	443.1	339.6	12.64	1.178	13,347	8.89	256.2

Table B
Data for Table 1

EXPLORATION EXPENDITURES BY YEAR OF ANLAYSIS MM 1979 $

Analysis Year	*Drilling*	*Leases Ex. O.C.S.*	*G&G*	*Other*	*Sub Total Four Year Lead Time*	*O.C.S. Leases Seven Year Lead Time*	*Total*
59	2,075	1,453	820	1,212	5,560	-	5,560
60	2,355	1,453	932	1,282	6,022	128	6,150
61	2,138	1,429	940	1,316	5,823	225	6,048
62	1,800	1,410	926	1,272	5,408	225	5,633
63	1,978	1,118	771	1,205	5,072	97	5,169
64	1,834	813	656	1,339	4,642	-	4,642
65	1,817	1,005	657	1,380	4,859	72	4,931
66	1,952	751	689	1,327	4,719	296	5,015
67	1,795	825	662	1,316	4,598	296	4,894
68	1,911	1,060	752	1,262	4,985	599	5,584
69	1,849	945	755	1,142	4,691	386	5,077
70	1,693	780	799	1,197	4,469	457	4,926
71	1,689	654	808	1,122	4,273	82	4,355
72	1,700	458	716	1,154	4,028	219	4,247
73	1,711	236	659	1,049	3,655	498	4,153
74	1,440	280	576	934	3,230	1,383	4,613
75	1,332	268	600	944	3,144	1,305	4,449
76	1,498	363	599	985	3,445	1,516	4,961
77	1,622	345	653	1,109	3,729	685	4,414
78	2,351	317	851	1,246	4,765	1,838	6,603
79	2,948	890	853	1,252	5,943	2,859	8,802
80	2,995	846	822	1,164	5,827	5,177	11,004
81	3,331	1,185	946	1,252	6,714	4,425	11,139
82	4,430	1,243	1,071	1,369	8,113	3,764	11,877
83	4,954	2,444	1,081	1,643	10,122	2,001	12,123
84						2,171	
85						2,779	

Table C
Data for Graph 3

DEVELOPMENT EXPENDITURES
BY YEAR OF ANALYSIS
IN 1979 $

Analysis Year	*Drilling*	*Improved Recovery Programs*	*Other Capital*	*G&A Overhead*	*Total*
59	4,409	295	1,164	381	6,249
60	3,912	222	1,021	358	5,513
61	3,812	216	1,047	383	5,458
62	3,984	190	1,237	394	5,805
63	3,436	179	1,198	382	5,195
64	3,521	287	1,385	369	5,562
65	3,398	219	1,269	381	5,267
66	3,299	207	1,225	356	5,087
67	3,035	205	1,231	396	4,867
68	3,036	277	1,095	393	4,751
69	3,066	220	1,139	388	4,813
70	3,000	350	938	392	4,680
71	2,608	319	795	342	4,064
72	3,026	388	907	419	4,740
73	3,083	349	985	385	4,802
74	3,791	431	1,507	385	6,114
75	5,412	404	1,643	586	8,045
76	6,023	376	2,486	438	9,323
77	7,991	399	2,345	447	11,182
78	9,452	324	2,383	478	12,637
79	10,821	450	2,517	601	14,389

Table D
Data for Graph 3

NEW CRUDE OIL WELLS COMPLETED
BY YEAR OF ANALYSIS

Analysis Year	*South Louisiana Including Offshore*	*USA Ex. South Louisiana and Offshore*				*Total*
		Texas	*North-East*	*Other Ex. No. Alaska*	*Sub Total*	
59	1,067	10,204	3,322	11,207	24,733	25,800
60	1,064	7,881	2,043	10,198	20,122	21,186
61	1,025	7,556	1,805	10,715	20,076	21,101
62	1,110	7,933	1,955	10,251	20,139	21,249
63	1,089	6,682	2,186	10,331	19,199	20,288
64	1,092	6,748	2,398	10,382	19,528	20,620
65	1,221	6,181	2,438	8,921	17,540	18,761
66	1,096	5,359	1,779	8,546	15,684	16,780
67	908	4,324	2,218	7,879	14,421	15,329
68	971	3,903	1,685	7,771	13,359	14,330
69	786	3,883	1,502	8,184	13,569	14,355
70	929	3,924	1,443	6,693	12,060	12,989
71	655	3,699	1,282	6,195	11,176	11,831
72	676	3,923	1,298	5,401	10,622	11,298
73	624	3,686	1,336	4,243	9,265	9,889
74	499	4,402	1,904	5,963	12,269	12,768
75	554	6,074	2,000	7,749	15,823	16,377
76	494	5,779	2,167	8,581	16,527	17,021
77	411	6,533	2,638	9,296	18,467	18,878
78	432	6,086	2,442	8,769	17,297	17,729
79	413	6,765	2,888	9,274	18,927	19,340
80	390	9,688	3,219	13,620	26,527	26,917
1959-79	17,116	121,525	42,729	176,549	340,803	357,919

Table E
Data for Graph 4

CRUDE OIL PRIMARY ULTIMATE RECOVERY
PER NEW CRUDE OIL WELL COMPLETED
BY YEAR OF ANALYSIS
(MBBLS/WELL)

Analysis Year	*South Louisiana Including Offshore*	*USA Ex. South Louisiana and Offshore*				*Total*
		Texas	*North-East*	*Other Ex. No. Alaska*	*Sub Total*	
59	901	83	12	79	71	106
60	386	79	8	93	79	94
61	506	102	9	64	73	94
62	488	69	13	67	63	85
63	377	78	15	55	58	76
64	559	57	23	115	83	109
65	424	63	14	74	62	85
66	532	53	19	62	54	85
67	523	60	18	73	60	88
68	542	36	24	94	68	100
69	541	42	21	58	49	76
70	643	49	15	68	56	98
71	368	48	11	77	60	77
72	538	39	13	74	54	83
73	415	51	9	70	53	76
74	549	34	11	71	48	68
75	704	27	8	32	27	50
76	455	35	14	35	32	44
77	533	23	12	44	32	43
78	403	26	11	34	28	37
79	329	30	10	58	41	47
1959-79	518	55	14	67	56	78

Table F
Data for Graph 5

NONASSOCIATED NATURAL GAS
ULTIMATE RECOVERY PER NEW GAS WELL COMPLETED
BY YEAR OF ANALYSIS

Analysis Year	*Ultimate Recovery (BCF)*			*New Gas Wells*			*Ultimate Recovery per New Gas Well (MMCF/Well)*		
	Northeast	*Other*	*USA*	*Northeast*	*Other*	*USA*	*Northeast*	*Other*	*USA*
1959			14,744	1,482	3,547	5,029			2,932
1960			11,134	1,541	3,717	5,258			2,118
1961			14,724	1,523	4,141	5,664			2,600
1962			17,552	1,762	4,086	5,848			3,001
1963			12,947	1,430	3,321	4,751			2,725
1964			17,059	1,521	3,334	4,855			3,514
1965			18,246	1,445	3,279	4,724			3,862
1966	409	13,572	13,981	1,076	3,301	4,377	380	4,111	3,194
1967	361	14,030	14,391	1,022	2,637	3,659	353	5,320	3,933
1968	342	9,100	9,442	1,131	2,325	3,456	302	3,914	2,732
1969	419	8,170	8,589	1,473	2,610	4,083	284	3,130	2,104
1970	504	9,455	9,959	1,615	2,225	3,840	312	4,249	2,593
1971	416	9,952	10,368	1,303	2,527	3,830	319	3,938	2,707
1972	464	9,358	9,822	1,606	3,322	4,928	289	2,817	1,993
1973	541	9,076	9,617	2,147	4,238	6,385	252	2,142	1,506
1974	449	8,712	9,161	2,387	4,853	7,240	188	1,795	1,265
1975	558	9,070	9,628	2,191	5,389	7,580	255	1,683	1,270
1976	545	7,614	8,159	2,959	6,126	9,085	184	1,243	898
1977	707	9,471	10,178	3,480	7,898	11,378	203	1,199	895
1978	1,031	8,906	9,937	4,139	8,925	13,064	249	998	761
1979	858	9,932	10,790	4,844	9,837	14,681	177	1,010	735
1980				5,132	10,598	15,730			
1966-1979	7,604	136,418	144,022	31,373	66,213	97,586	242	2,061	1,476
1959-1979			250,428	42,077	91,638	133,715			1,873

Table G
Data for Graphs 4 and 5

HYDROCARBON RESERVES DEVELOPED BY YEAR OF ANALYSIS (MMB COE)

Analysis Year	*Crude Oil*	*Associated Dissolved Natural Gas*	*Non-Associated Natural Gas*	*Lease Condensate*	*Total*
59	3,499	721	2,631	124	6,975
60	2,569	530	1,987	94	5,180
61	2,556	527	2,627	124	5,834
62	2,314	477	3,132	147	6,070
63	1,967	405	2,310	109	4,791
64	2,875	593	3,044	143	6,655
65	2,060	425	3,256	153	5,894
66	1,832	391	2,495	117	4,835
67	1,727	291	2,568	121	4,707
68	1,848	345	1,685	79	3,957
69	1,403	290	1,533	72	3,298
70	1,628	370	1,777	84	3,859
71	1,169	228	1,850	87	3,334
72	1,202	270	1,753	83	3,308
73	967	222	1,716	81	2,986
74	1,112	256	1,635	77	3,080
75	1,044	175	1,718	81	3,018
76	972	191	1,456	69	2,688
77	1,032	227	1,816	85	3,160
78	838	190	1,773	83	2,884
79	1,164	209	1,925	91	3,389
1959-79	35,778	7,333	44,687	2,104	89,902

Table H
Data for Graph 6

UNIT INVESTMENT COST INDEXES

Analysis Year	*Investment (MM 1979 $)*			*Reserve Volumes (MM Bbl. COE)*	*Unit Investment Costs (1979 $/Bbl. COE)*		
	Explor.	*Devel.*	*Total*		*Explor.*	*Devel.*	*Total*
59	5,560	6,249	11,809	6,975	.797	.896	1.693
60	6,150	5,513	11,663	5,180	1.187	1.064	2.251
61	6,048	5,458	11,506	5,834	1.037	.935	1.972
62	5,633	5,805	11,438	6,070	.928	.956	1.884
63	5,169	5,195	10,364	4,791	1.079	1.084	2.163
64	4,642	5,562	10,204	6,655	.697	.836	1.533
65	4,931	5,267	10,198	5,894	.837	.893	1.730
66	5,015	5,087	10,102	4,835	1.037	1.052	2.089
67	4,894	4,867	9,761	4,707	1.040	1.034	2.074
68	5,584	4,751	10,335	3,957	1.411	1.201	2.612
69	5,077	4,813	9,890	3,298	1.539	1.459	2.998
70	4,926	4,680	9,606	3,859	1.276	1.213	2.489
71	4,355	4,064	8,419	3,334	1.306	1.219	2.525
72	4,247	4,740	8,987	3,308	1.284	1.433	2.717
73	4,153	4,802	8,955	2,986	1.391	1.608	2.999
74	4,613	6,114	10,727	3,080	1.498	1.985	3.483
75	4,449	8,045	12,494	3,018	1.474	2.666	4.140
76	4,961	9,323	14,284	2,688	1.846	3.468	5.314
77	4,414	11,182	15,596	3,160	1.397	3.539	4.936
78	6,603	12,637	19,240	2,884	2.289	4.382	6.671
79	8,802	14,389	23,191	3,389	2.597	4.246	6.843

Table I
Data for Graph 7

ESTIMATED AVERAGE ENERGY PRICES OVER LIFE
BY YEAR OF ANALYSIS
BASE CASE

Analysis Year	Crude Oil (1979 $ Per Bbl.)	Natural Gas (1979 $ Per MCF) Intra-State	Natural Gas (1979 $ Per MCF) Inter-State	Total Energy (1979 $ Per Bbl. COE)
59	7.56	1.00	.61	5.95
60	7.40	1.00	.64	5.91
61	7.56	1.09	.65	5.93
62	7.66	1.18	.65	5.90
63	7.70	1.21	.66	6.06
64	7.50	1.29	.63	6.06
65	8.08	1.40	.62	6.19
66	8.42	1.35	.62	6.36
67	8.22	1.53	.60	6.40
68	8.66	1.69	.62	7.10
69	9.84	2.04	.68	8.03
70	10.12	2.44	.65	8.51
71	10.99	3.01	.74	9.89
72	11.90	3.02	.77	10.67
73	16.47	3.10	1.43	13.89
74	17.52	3.15	1.51	14.89
75	18.73	3.26	2.08	16.61
76	18.94	3.22	2.23	17.04
77	19.23	3.28	3.36	18.80
78	20.09	3.36	3.70	19.75
79	26.26	--	3.92	23.55

Table J
Data for Graph 8

PRODUCTION OPERATING COSTS
(1979 $ PER WELL PER YEAR)
BASE CASE

Production Year	North-East	USA Ex. Northeast	Total
59	2,588	7,843	6,380
60	2,474	7,246	5,914
61	2,397	7,359	6,020
62	2,320	7,509	6,136
63	2,361	7,418	6,087
64	2,685	7,262	6,174
65	2,584	7,449	6,324
66	2,375	7,989	6,665
67	2,336	7,909	6,626
68	2,503	8,339	7,085
69	2,392	8,477	7,181
70	2,244	9,004	7,587
71	2,141	9,300	7,760
72	2,150	9,300	7,741
73	2,313	9,636	8,020
74	2,687	11,255	9,324
75	2,907	12,230	10,086
76	3,233	13,599	11,219
77	3,497	14,665	12,133
78	3,646	15,264	12,656
79	3,852	16,131	13,369

Table K
Data for Graph 9

PROFITABILITY DATA
BASE CASE
MM 1979 $

Analysis Year	Undiscounted Basis: Investment	Undiscounted Basis: Profit	Undiscounted Basis: Percent Profit	Payout Time Years After Analysis Year	Average Annual Real Rate of Return (%): Yearly	Average Annual Real Rate of Return (%): 3-Year Moving Average
59	11,809	9,323	79	8	7.59	6.1
60	11,663	4,625	40	10	4.59	5.9
61	11,506	6,182	54	9	5.42	5.3
62	11,438	6,968	61	9	5.79	5.3
63	10,364	4,769	46	11	4.74	6.4
64	10,204	9,311	91	7	8.76	6.7
65	10,198	7,703	76	9	6.62	6.8
66	10,102	5,494	54	13	5.05	5.6
67	9,761	5,474	56	12	5.08	4.7
68	10,335	4,177	40	13	3.97	4.3
69	9,890	3,741	38	13	3.73	4.5
70	9,606	6,497	68	11	5.90	5.4
71	8,419	7,261	[illegible]	10	6.89	6.8
72	8,987	7,939	88	9	7.81	8.6
73	8,955	10,615	119	6	10.94	9.4
74	10,727	10,668	99	6	9.31	9.7
75	12,494	10,761	86	6	9.06	8.4
76	14,284	8,187	57	8	6.89	8.7
77	15,596	12,725	82	7	10.10	7.7
78	19,240	9,627	50	8	6.45	8.2
79	23,191	16,364	71	7	8.43	7.5

Table L
Data for Graph 10

CASH FLOW SUMMARY
MM 1979 $
BASE CASE

Analysis Year	Total Revenue Less WPT	Operating Cash Income: Before Tax	Operating Cash Income: After Tax	Net Cash Flow
59	42,198	25,534	21,131	9,323
60	31,103	17,411	16,288	4,625
61	35,198	20,349	17,688	6,182
62	36,523	21,726	18,407	6,968
63	29,531	17,093	15,133	4,769
64	41,018	25,265	19,515	9,311
65	37,170	23,062	17,902	7,703
66	31,299	19,368	15,596	5,494
67	30,705	19,300	15,235	5,474
68	28,557	17,687	14,513	4,177
69	27,107	16,861	13,631	3,741
70	33,570	22,174	16,103	6,497
71	33,754	22,210	15,681	7,261
72	36,118	23,870	16,927	7,939
73	42,558	29,212	19,571	10,616
74	47,013	31,952	21,395	10,668
75	50,738	33,869	23,255	10,761
76	47,196	30,860	22,471	8,187
77	61,008	40,570	28,321	12,725
78	58,609	38,710	28,867	9,627
79	81,455	56,401	39,555	16,364

Table M
Data for Graph 11

CASH FLOW SUMMARY
PERCENT OF REVENUE
BASE CASE

Analysis Year	*Total Revenue Less WPT*	*Operating Cash Income*		*Net Cash Flow*	*Cost Elements*		
		Before Tax	*After Tax*		*Operating Costs*	*Income Taxes*	*Investment*
1959	100.0	60.5	50.1	22.1	39.5	10.4	28.0
1960	100.0	56.0	52.4	14.9	44.0	3.6	37.5
1961	100.0	57.8	50.3	17.6	42.2	7.5	32.7
1962	100.0	59.5	50.4	19.1	40.5	9.1	31.3
1963	100.0	57.9	51.2	16.1	42.1	6.7	35.1
1964	100.0	61.6	47.6	22.7	38.4	14.0	24.9
1965	100.0	62.0	48.2	20.7	38.0	13.8	27.5
1966	100.0	61.9	49.8	17.6	38.1	12.1	32.2
1967	100.0	62.9	49.6	17.8	37.1	13.3	31.8
1968	100.0	61.9	50.8	14.6	38.1	11.1	36.2
1969	100.0	62.4	50.5	13.8	37.6	11.9	36.7
1970	100.0	66.1	48.0	19.4	33.9	18.1	28.6
1971	100.0	65.8	46.5	21.5	34.2	19.3	25.0
1972	100.0	66.1	46.9	22.0	33.9	19.2	24.9
1973	100.0	68.6	46.0	24.9	31.4	22.6	21.1
1974	100.0	68.0	45.5	22.7	32.0	22.5	22.8
1975	100.0	66.8	45.8	21.2	33.2	21.0	24.6
1976	100.0	65.4	47.6	17.3	34.6	17.8	30.3
1977	100.0	66.5	46.4	20.9	33.5	20.1	25.5
1978	100.0	66.0	49.3	16.4	34.0	16.7	32.9
1979	100.0	69.2	48.6	20.1	30.8	20.7	28.5

Table N
Data for Graph 12

EFFECTIVE INCOME TAX RATE
MM 1979 $
BASE CASE

Analysis Year	*Net Cash Flow*	*Income Taxes*	*Profit Before Income Tax*	*Effective Income Tax Rate*
59	9,323	4,403	13,726	.321
60	4,625	1,123	5,748	.195
61	6,182	2,661	8,843	.301
62	6,968	3,319	10,287	.323
63	4,769	1,960	6,729	.291
64	9,311	5,750	15,061	.382
65	7,703	5,160	12,863	.401
66	5,494	3,772	9,266	.407
67	5,474	4,065	9,539	.426
68	4,177	3,174	7,351	.432
69	3,741	3,230	6,971	.463
70	6,497	6,071	12,568	.483
71	7,261	6,529	13,790	.473
72	7,939	6,943	14,882	.467
73	10,616	9,641	20,257	.476
74	10,668	10,557	21,225	.497
75	10,761	10,614	21,375	.497
76	8,187	8,389	16,576	.506
77	12,725	12,249	24,974	.490
78	9,627	9,843	19,470	.506
79	16,364	16,846	33,210	.507

Table O

ABBREVIATIONS

Numerous abbreviations have been used throughout the analysis. Many of these are necessary because of space limitations on tables and graphs. Others appear in the text after the unabbreviated word or phrase is first mentioned. Some of the abbreviations are obvious or common place. However, in order to avoid confusion, all of the abbreviations are listed below:

AAPG	American Association of Petroleum Geologists
adjust.	adjusted
AGA	American Gas Association
AL	Alabama
API	American Petroleum Institute
B	barrel
bbl	barrel
bbls	barrels
BCF	billion cubic feet
B/MMCF	barrels per million cubic feet
BOPD/W	barrels of oil per day per well
BPCL	base production control level
BTU	British thermal unit
CA	California
cap.	capital
CF	cubic feet
CF/B	cubic feet per barrel
CMB	Chase Manhattan Bank
COE	crude oil equivalent
const. mach. & equip.	construction, machinery, and equipment
cum.	cumulative
dev.	development
devel.	development
disc.	discovered
dist.	district
DOE	Department of Energy
drlg.	drilling
equip.	equipment
ex	excluding
expend.	expenditure
explor.	exploration
FL	Florida
FPC	Federal Power Commission
ft.	feet
G&A	general and administrative
G&G	geological and geophysical
GNP	gross national product
GOR	gas oil ratio
Geoph. Fld. & D.P.	geophysical field and data processing
ITC	investment tax credit
JAS	Joint Association Survey

L&M	leases and minerals
LA	Louisiana
M	thousand
MM	million
MMM	billion
MCFPD/W	thousand cubic feet per day per well
MAFLA	eastern Gulf of Mexico off Mississippi, Alabama, and Florida
mid	middle
NGL	natural gas liquids
NGPA	Natural Gas Policy Act of 1978
no.	number
OCS	outer continental shelf
ovhd.	overhead
PA	per annum
(P)	preliminary
R/P	reserves to production (ratio)
So.	south
So. LA & Off.	South Louisiana and Offshore
suppl.	supplemental
surr.	surrendered
TCF	trillion cubic feet
TP	test promotion
TX	Texas
UOP	unit of production
USA	United States of America
USBM	United States Bureau of Mines
USGS	United States Geological Survey
WPT	Windfall Profit Tax
yr.	year
&	and
¢	cent
$	dollars
$/w/yr.	dollars per well per year

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ADDENDUM

THE ECONOMIC RECOVERY TAX ACT OF 1981

The Economic Recovery Tax Act of 1981 was passed while this report was in the final printing stages. Among the changes in tax provisions affecting the crude oil and natural gas exploration, development, and production business, only two changes in the manner of calculating windfall profit taxes are believed to impact significantly on the tax calculations of this analysis. The windfall profit tax on "newly discovered" tier 3 oil is reduced from 30 percent to 15 percent over a five year period as follows: 1982 — 27.5 percent, 1983 — 25 percent, 1984 — 22.5 percent, 1985 — 20 percent, 1986 and after — 15 percent. Stripper oil (tier 2), produced by independent producers (nonrefiners and nonmarketers), during 1983 and after is exempt from windfall profit tax.

The impacts of these WPT changes on profitability were investigated as follows: For analysis years 1979 and 1980, the WPT on tier 3 "newly discovered" oil, produced after 1981, was reduced. For all analysis years 1959-1980, the WPT rate on 50 percent of tier 2 stripper oil production after 1982 was reduced from 60 percent to 0 percent. Although it is estimated that independent producers account for about half of total stripper oil production, the independent producer share of stripper oil, according to analysis year, has not been investigated. The impacts of the changes in WPT on profitability are summarized below:

REDUCE WPT ON TIER 3 NEWLY DISCOVERED CRUDE OIL

	Average Crude Oil Price Over Life (1979 $/B)(1)			*Average Energy Price Over Life (1979 $/B COE)*(1)			*Average Annual Real Rate of Return (%)*		
Analysis Year	*Base Case*	*Alternate Case*	*Increase*	*Base Case*	*Alternate Case*	*Increase*	*Base Case*	*Alternate Case*	*Increase*
1979	26.26	26.89	0.63	23.55	23.79	0.24	8.43	8.55	0.12
1980 L	26.52	27.20	0.68	24.30	24.56	0.26	5.50	5.64	0.14
1980 H	26.60	27.27	0.67	24.37	24.63	0.26	7.17	7.30	0.13

(1) After deduction of WPT

EXEMPT INDEPENDENT PRODUCER TIER 2 STRIPPER OIL FROM WPT

	Average Crude Oil Price Over Life (1979 $/B)[1]			*Average Energy Price Over Life (1979 $/B COE)*[1]			*Average Annual Real Rate of Return (%)*		
Analysis Year	*Base Case*	*Alternate Case*	*Increase*	*Base Case*	*Alternate Case*	*Increase*	*Base Case*	*Alternate Case*	*Increase*
1959	7.56	7.56	-	5.95	5.95	-	7.59	7.59	-
1963	7.70	7.72	0.02	6.06	6.07	0.01	4.74	4.75	0.01
1967	8.22	8.39	0.17	6.40	6.47	0.07	5.08	5.16	0.08
1971	10.99	11.37	0.38	9.89	10.04	0.15	6.89	7.01	0.12
1975	18.73	19.66	0.93	16.61	16.95	0.34	9.06	9.29	0.23
1976	18.94	20.44	1.50	17.04	17.62	0.58	6.89	7.26	0.37
1977	19.23	20.91	1.68	18.80	19.40	0.60	10.10	10.49	0.39
1978	20.09	21.88	1.79	19.75	20.32	0.57	6.45	6.80	0.35
1979	26.26	26.64	0.38	23.55	23.70	0.15	8.43	8.50	0.07
1980 L	26.52	26.93	0.41	24.30	24.45	0.15	5.50	5.58	0.08
1980 H	26.60	27.01	0.41	24.37	24.53	0.16	7.17	7.25	0.08

(1) After deduction of WPT

For analysis years 1979 and 1980, the impacts summarized on the two tables above should be roughly additive. These impacts on profitability resulted from recalculation of WPT on tier 3 and tier 2 production volumes of the base case. An additional profitability impact, not summarized above, would result from reclassification of some tier 3 production, for analysis years 1979 and 1980, to tier 2 production. This is because, under the new tax act, the realization after WPT is higher for independent produced stripper oil than for newly discovered oil. This latter impact has not been calculated; however, it is estimated that the transfer from independent produced tier 3 to tier 2 classification could increase the average annual real rate of return for analysis years 1979 and 1980 an additional 0.06 percent points.

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APR 26 1982

SUN

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April 23, 1982

ENERGY AND NATURAL RESOURCES
RECEIVED
APR 26 1982
WASHINGTON, D.C. 20510

The Honorable James McClure
Chairman
Senate Energy and Natural Resources Committee
3202 Dirksen Senate Office Building
Washington, D.C. 20510

Attention: Mr. Howard Useem

Dear Mr. Chairman:

Sun would appreciate having the following statement included in the record of hearings that were held on March 22 - 23, 1982, by the Senate Energy and Natural Resources Committee.

The record of oral testimony and statements filed during the Committee hearings, in our opinion, did not adequately address the impact that purchaser protection clauses in natural gas contracts will have on natural gas prices upon deregulation. These purchaser protection clauses, which are often referred to as "economic relief" or "ecomomic out" clauses will surely mitigate against dramatic price increases or any so-called "fly-up" of prices upon deregulation.

There are numerous types of economic relief clauses that have been insisted upon in recent years by purchasers in their contracts in anticipation of natural gas deregulation. Both interstate and intrastate purchasers have inserted these clauses into their natural gas purchase contracts over the years in order to prevent any possibility of instantaneous or significant price increases which would render the gas economically unmarketable. Various types of purchaser economic relief clauses are described below:

1. Right to Terminate or Abrogate

   If the redetermined price is unacceptable to one of the purchasers, the gas contract may be terminated in whole or in part.

2. Right of First Refusal

If the redetermined price is unacceptable to the purchaser, the purchaser may terminate the contract. However, if the producer obtains a higher price from another purchaser, the original purchaser has the right of first refusal. There may also be a right of the producer to have the gas transported by the original purchaser to the new purchaser for a fee.

3. Pass-Through Limitation

If the redetermined price exceeds what the purchaser is allowed by the appropriate regulatory authority to include in its rate base or otherwise pass through to its customers, the price is reduced accordingly.

4. Right to Arbitrate

If the redetermined price is unacceptable to one of the parties, the price will be set by binding third party arbitration.

5. Right to Make Alternative Price Proposals

A purchaser may have the right to submit alternative price proposals as long as they are not less than a specified contractual floor price.

Investigation of Sun's natural gas contracts discloses the common use of purchaser economic relief clauses, with an increasing prevalence of such purchaser economic relief clauses in recent years. A thorough analysis of Sun's highest volume gas contracts indicates that most of these contracts contain one or more of the above forms of economic relief for purchasers. Sun believes that its situation is not unusual and should be representative of the industry. Therefore, we believe that purchaser economic relief clauses will operate to stabilize natural gas prices upon deregulation. Conceivably, gas price reductions may result.

Page Three
April 23, 1982

Sun believes that the subject of purchaser economic relief clauses in gas contracts is very important and should be given ample attention and study when debating and projecting what will happen to natural gas prices upon deregulation. These clauses when coupled with free market pressures upon deregulation will help insure that gas prices will not exceed market clearing levels.

Sun stands willing and able to provide additional information on this vital contract issue.

Sincerely,

Aubrey V. Hamilton
Aubrey V. Hamilton
Vice President

AVH/mr

cc: All members of the Senate Energy and Natural Resources Committee

Merrill Lynch

January 1982

Natural Gas Monthly

A Merrill Lynch Industry Review

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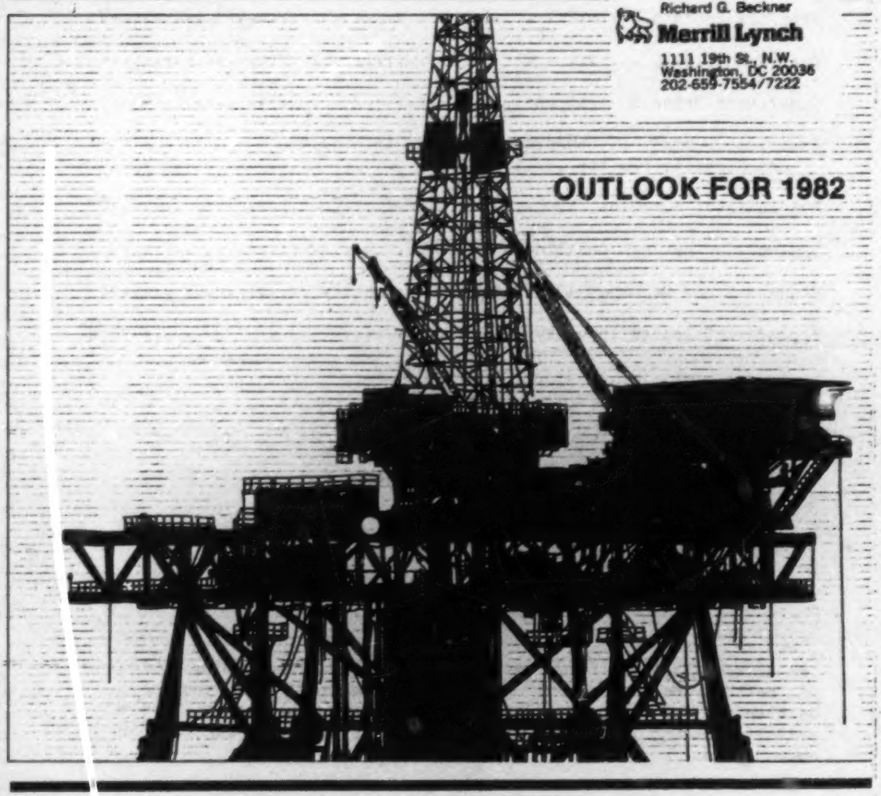

OUTLOOK FOR 1982

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January 12, 1982

The information set forth herein was obtained from sources which we believe reliable, but we do not guarantee its accuracy. Neither the information, nor any opinion expressed, constitutes a solicitation by us of the purchase or sale of any securities or commodities.

THE OUTLOOK FOR 1982

The natural gas industry, after struggling through the gas-short years of the 1970's, has thus far experienced good record years in the starting 1980's. We expect that 1982 will continue that favorable record, but the rest of the 1980's will not be without problems. As we see it, difficulties created by decontrol could be more severe for many companies than were the troubles caused in the gas-short years. This report will attempt to anticipate several potential problems as well as provide commentary on several of today's most frequently asked questions.

NATURAL GAS DECONTROL

Natural gas decontrol will probably be the most important energy issue considered by Congress in 1982. Upon reconvening on January 25, the Congress will have a full 29 weeks to consider legislation prior to adjourning on October 8. The first Congressional priority will probably be to tackle the Administration's plan for dismantling the Department of Energy (DOE). Once that issue is resolved, the center of attention is expected to be natural gas decontrol.

The Administration, which anticipates sending its initial deregulation bill to Capitol Hill in February, has two basic decontrol schemes from which to choose. Most observers believe that Mr. Reagan will support a program that calls for the deregulation of all natural gas prices between January 1, 1983 (after the November 1982 elections), and January 1, 1986 (one year after decontrol is scheduled to occur under the Natural Gas Policy Act of 1978 (NGPA). Supposedly, the Administration will not include a windfall profits tax (WPT) provision in such a program.

The second option is one that may receive more consideration in the future, especially if Administration worries continue to mount concerning future budget deficits (estimated to be in excess of $100 billion in both fiscals 1982 and 1983). If full decontrol is effected, we estimate that a WPT could result in incremental government revenues of $35.0 billion, including additional income taxes that would be paid by producers. Proceeds from a WPT of this magnitude appear to be the only reason that many Congressmen will even consider positive action on the controversial decontrol issue. We estimate that a WPT in a phased decontrol program would produce funds no greater than $70 billion in the first year of decontrol.

As far as the current year is concerned, we believe that the November elections eliminate the possibility of passage of decontrol legislation. However, passage could be accomplished in 1983, but not without a bitter struggle. Certainly decontrol foes, including Representative John Dingell (D-Mich.) and Senator Howard Metzenbaum (D-Ohio), will do their utmost to thwart any Congressional decontrol action. In addition, the lobby against decontrol appears awesome: it includes various consumer groups, distribution companies, pipeline companies, and many gas producers, primarily those producing large quantities of deep, deregulated gas. Consequently, for those reasons as well as reasons that we have outlined in past publications, we believe that the chances are high that decontrol will occur as scheduled in the NGPA.

NATURAL GAS PRICES

The average wellhead price for natural gas has been rising at an approximate rate of 30% for the last two years. Those above-average increases can be attributed to three factors: (1) Producers have been very aggressive in seeking the highest maximum ceiling price possible under the NGPA for their production; (2) Prices of deep gas and tight formation gas have been rising very rapidly, and production from those categories has been increasing; (3) Old natural gas production has been depleting at an average annual rate of approximately 12% and that gas is being replaced by high-priced new gas. We estimate that the average wellhead price for natural gas approximated $1.85 per MCF in 1981, up from $1.50 a year earlier. For 1982, we believe that the average wellhead price could rise to approximately $2.40-$2.50 per MCF. Our reasoning for such a substantial increase is presented below:

- The price of Section 102 gas rises each year at the rate of inflation plus a real growth factor of 4.0%. That price is currently $3.00 per MCF and we estimate that it will average approximately $3.15 for the current year. Section 103 gas, which rises annually at the rate of inflation, is currently $2.57 per MCF and is expected to average about $2.65 for 1982. We estimate that those two categories will comprise about 45% of total production in 1982.

- The FERC is in the process of finalizing an incentive price for two categories of high-cost gas: deep-water gas and near-deep gas. The incentive price for gas produced in water depths in excess of 300 feet will command a price equal to 200% of the Section 103 price (the same formula governing tight-gas prices), or $5.14 per MCF in the current month. That price has an annual escalator equal to the rate of inflation and is expected to average about $5.30 in the current year. A final rule has not been written for near-deep gas (gas produced from wells drilled 10,000-15,000 feet)because the FERC needs additional cost data in order to determine a realistic incentive price. However, preliminary indications are that the price will be equal to 150%-200% of the Section 103 price. In addition, production from wells drilled in early 1977 could qualify for the incentive price, which would be a significant windfall for producers. We estimate that tight gas, near-deep gas, and deep-water gas could collectively account for approximately 10% of 1982 production at an average price of $5.15-$5.30 per MCF.

- Deep-drilling activity has soared since the passage of the NGPA primarily because of the high prices being paid for natural gas in this deregulated category. We estimate that deep gas prices could average about $7.00 in 1982 and may account for approximately 4.0% of total production.

- Approximately 40% f the remaining gas production in 1982 is projected to be in the older categories established by the NGPA. We estimate for 1982 that the average price of that gas will approximate $1.25-$1.50 per MCF.

The average wellhead price of gas in a decontrolled environment is an unknown factor that is currently being deciphered by both industry and investment analysts. We believe that the average wellhead price of natural gas, once decontrolled, will be no greater than $4.00-$4.25 per MCF. Basically, natural gas competes with No. 6 (residual) fuel oil on the industrial level, and the price of No. 6 to the end user is approximately $5.00-$5.25 per MCF. If the end-use price of natural gas is to be competitive with residual fuel oil, we believe that the wellhead price cannot be greater than $4.25 per MCF. If producers insist on receiving substantially higher prices, the result could be plummeting gas sales. The marginal user of natural gas is the industrial customer, accounting for 60% of total gas consumption (including electric utilities). However, approximately 7 out of 10 industrial users possess a dual fuel-burning capability, and are able to switch to residual fuel oil, and will do so when the economics are justified. Consequently, we believe that as long as stability prevails in the world oil markets, the threat of industrial fuel switching could prevent the wellhead price of gas from soaring to unrealistic levels.

The gas industry, as well as politicians, are concerned that a substantial price spike will occur in 1985 when gas is decontrolled under the NGPA. We disagree. At the end of 1984, based on an annual inflation rate of 8.0%, we estimate that the average price of natural gas will be $3.75-$4.00 per MMBtu (Chart 1). Consequently, if the average wellhead price after decontrol is in line with our estimate of $4.00-$4.25, a dramatic price spike will not occur. In fact, our estimates indicate that if the NGPA were to remain in effect beyond January 1, 1985, the average price of gas in that year would approximate $4.00-$4.25 per MCF, which is also our decontrolled price estimate.

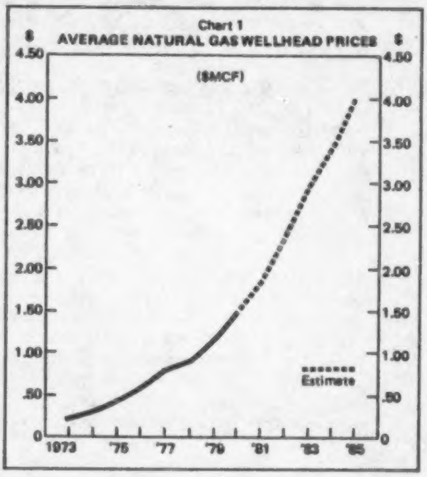


Chart 1
AVERAGE NATURAL GAS WELLHEAD PRICES

WINDFALL PROFITS TAX (WPT)

We do not believe that any natural gas decontrol measure can escape Congress without the inclusion of a WPT. In fact, the government's need for revenues that could be generated by such a tax is the only argument that we believe could lead to prompt action on the decontrol issue in 1982. We estimate that the proceeds from such a tax in a fully decontrolled environment, including increased taxes that would be paid by producers, could approximate $35 billion (no more than an estimated $10 billion in the first year of a phased decontrol program), if the decontrolled wellhead price of natural gas falls into our projected range of $4.00-$4.25 per MMBtu. To date, President Reagan continues to oppose a WPT; however, we believe that he could change his mind during 1982. His justification for that anticipated change may well be his belief that a WPT will be a lesser evil than a budget deficit in 1983 that could approach the $150 billion level.

There has been a great deal of speculation as to what form the WPT would take. Below, we have summarized our thoughts as to the possible structure of a WPT:

- The WPT is expected to be in the form of an excise tax. We anticipate that it will probably be a very stiff tax, considering the government's need for additional revenues. Initially, an average tax rate of 75% or more would not surprise us.

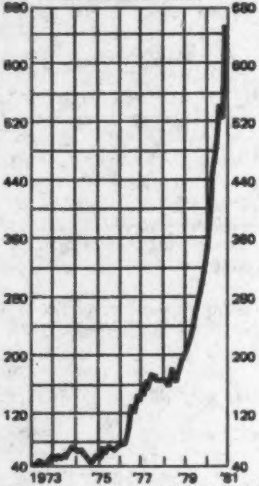
- The government recognizes that there is little to be accomplished by creating additional price incentives for flowing gas. Consequently, the most onerous provisions (perhaps a tax bite well above 75%) of a WPT could be aimed at older categories of natural gas, including new gas as defined by the NGPA.

- We believe that incentive-priced natural gas (Section 107 gas including deep gas, tight gas, gas produced from coal seams, gas produced from Devonian shale, near-deep gas and deep-water gas) could escape the WPT. As mentioned above, the price of Section 107 gas is expected to decline significantly from current levels in a fully decontrolled environment. Some of that gas will not be profitable to produce at the decontrolled prices that we are projecting. If a WPT is placed on that production, there would be no profit incentive to explore for Section 107 gas. Section 107 gas is very necessary from a long-term supply standpoint because of its high deliverability and long-lived reserves. According to estimates prepared by GHK Companies of Oklahoma City, approximately 70% of the estimated potential recoverable natural gas reserves in the U.S. are thought to be Section 107 gas (see Chart 3 on page 7). Consequently, any WPT that is devised by Congress must take great care not to reduce further the incentive for finding Section 107 gas. Otherwise, a great deal of damage will be inflicted on the supply outlook for long-term natural gas in the U.S.

DEEP GAS

Under Section 107 of the NGPA, producers are entitled to receive a deregulated price for natural gas produced from wells drilled 15,000 feet or deeper. For 1981 we estimate that the average price of deep gas at $6.25 per MMBtu, and for 1982 we believe that average price could rise to the $7.00-$7.50 range. Several recent contracts have called for deep gas prices in excess of $10.00 per MMBtu. Although prices of that magnitude are the exception rather than the rule, many contracts have priced deep gas at approximately $8.00-$8.50 per MMBtu. Pipelines have been willing to pay such a high premium to our projected deregulated market-clearing price of $4.00-$4.25 for two reasons: (1) Most pipelines enjoy the benefit of a low-cost cushion because the lion's share of their total supplies is both old gas and low in price. Consequently, if a pipeline is paying a substantial premium for deep gas, its average cost of gas is not materially affected because most of its supply is priced below current NGPA prices; (2) the deep-gas reserves are usually characterized by a long life and a high rate of deliverability. The presence of both usually dictates a premium price. However, because the average wellhead price of gas is rising so rapidly, we believe that deep gas prices could begin to stabilize and then soften beyond 1982.

Chart 2
DEEP WELL ACTIVITY*



*Deep Anadarko Basin
Source: Oil & Gas Journal

As a result of the high prices that are being received for deep gas, deep drilling activity has surged since deep gas prices were decontrolled in late 1979. In the Anadarko Basin alone, probably the premier area from a deep drilling standpoint, the number of deep wells drilled increased from about 160 in 1979 to approximately 650 at the end of 1981 (Chart 2). Currently, we estimate that deep gas accounts for approximately 4.0% of total U.S. natural gas production, and GHK estimates that it could account for almost 20% of total potential recoverable reserves.

Many investors believe that deep gas will continue to command a significant premium to the market-clearing price after complete decontrol has been effected. Generally, they believe that those prices are protected by long-term contracts. We do not agree with this premise. With very few exceptions, contracts governing deep gas production contain buyer-escape clauses or market kick-out clauses. Those clauses provide relief to the purchasing pipeline under the following circumstances: (1) when a pipeline is not allowed by the FERC to pass on the cost of the purchased gas to its customers, or (2) when a pipeline discovers that the price of the gas is not economic and cannot be marketed when the higher prices are incorporated into its rates. If a buyer-escape clause is triggered, the producer and the pipeline attempt to renegotiate to an economic price level. If a contract does not contain either of those two clauses, we believe that producers might be willing to renegotiate; if not, pipelines unwilling to pay those current high prices could walk away from those contracts once decontrol has been effected. At best, deep gas might command a modest premium to the average decontrolled price; our estimate is for a price of approximately $4.50 per MMBtu (compared to our estimate for the average deregulated price of $4.00-$4.25 per MMBtu).

If our projections are correct, the excessive cost of drilling the majority of deep wells may render those wells uneconomical to drill. That could virtually put an end to exploration in the deep Tuscaloosa Trend of southern Louisiana as well as some portions of the Anadarko Basin. After decontrol occurs, webelieve there will be a definite change in drilling patterns. Activity is expected to slow down substantially in the deeper zones but should accelerate at depths of approximately 10,000 feet. Such a development could have a serious effect on deep drillers as well as producers.

INDEFINITE PRICE ESCALATORS

As the battle over decontrol heightens in 1982, the effects of triggering indefinite price escalators (IDPE) and most favored nations (MFN) clauses (as a result of natural gas decontrol) are subjects that should continue to receive great attention. IDPE's are clauses in contracts that specify the methods to be used in determining contract prices in the event of decontrol. Most of the clauses call for a redetermination of contract prices at the seller's request within 30 to 180 days of the date that decontrol of gas prices becomes effective. Price redetermination caused by IDPE clauses is usually based on either the highest one-to-three contract prices for gas from the same area of the country or the BTU equivalent of a specified type of oil (usually 110.0% of No. 2 fuel oil). An American Gas Association study recently estimated that approximately 70% of all contracts contain either IDPE or MFN clauses.

Many industry observers fear that implementation of such clauses due to natural gas decontrol could push the wellhead price of gas to a level equal to 110.0% of No. 2 fuel oil. Such a price could result in a significant decline in natural gas sales because of gas-to-oil fuel switching. The industry is lobbying feverishly for a provision in future decontrol legislation that would prohibit IDPE and MFN clauses from becoming effective so that substantial gas sales declines could be averted.

We do not believe that IDPE or MFN clauses are going to create the problems portented by the industry. Producers could ultimately agree to settle for prices well below the cost of No. 2 fuel oil, otherwise pipelines may not be able to market the gas. As a result, a significant gas surplus could develop. Pipelines would not be able to take all of the gas they had contracted for, and we doubt that they would honor the take-or-pay provisions contained in their contracts. That could ultimately force producers to settle for lower prices.

RESERVES, DEMAND, THE SURPLUS, NATURAL GAS LIQUIDS, AND PIPELINE PROFITS

Rising natural gas prices are expected to have a profound impact on future reserve additions, demand for natural gas, the natural gas liquids business, and potential interstate and intrastate pipeline profits. Below, we have attempted to summarize our thoughts on those subjects:

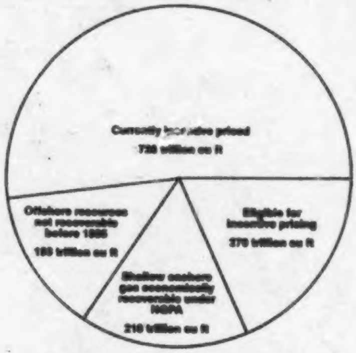
Natural Gas Reserves

Chart 3, which was prepared by GHK Companies of Oklahoma City and appeared in the December 28, 1981 issue of the Oil & Gas Journal estimates potential recoverable natural gas reserves in the United States at approximately 1,400 trillion cubic feet (TCF). As we pointed out in the previous section covering natural gas pricing, future price incentives are expected to be aimed at areas that contain the greatest portion of potential recoverable reserves. That should result in a significant improvement in future natural gas reserve additions. As chart 5 indicates, natural gas reserve additions bottomed at 6.8 TCF (32% of 1973 production of 21 TCF) in 1973 when the average wellhead price of natural gas approximated $0.35 per MCF. However, given the substantial price increase that has occurred since that time, the industry was able to add approximately 16.8 TCF (89% of 1980 production of 18.7 TCF) to reserves in 1980. We estimate that 1981 production approximated 18.5 TCF, and that reserve additions declined modestly to the 16.5 TCF level (a replacement ratio of 89%). After natural gas decontrol has been effected, we anticipate that annual production may finally begin to be offset by new reserve additions.

Demand and Sales

With Real GNP expected to be flat in 1982, gas sales are projected to be 20.7 TCF compared to an estimated 20.4 TCF in 1981. We do not anticipate a material increase in future natural gas sales until industrial consumption of natural gas begins to accelerate. However, industry is very reluctant to make a permanent commitment to natural gas because of uncertainty concerning the future price of gas after decontrol. That uncertainty is understandable, especially considering that many gas industry represen-

Chart 3
POTENTIAL RECOVERABLE NATURAL GAS



Legend

	Trillion cu ft
Potential/recoverable natural gas supplies which are already incentive priced	
Onshore beneath 15,000 ft (1)	240
Tight sand formations (2)	303
Coal seams (3)	45
Devonian shale (4)	60
Subtotal	728
Share of total potential supply	52%
Potential Recoverable natural gas supplies which can be incentive priced under NGPA	
Onshore between 10,000 and 15,000 (5)(6)	211
Offshore beneath 200 m (1)(7)	59
Subtotal	270
Share of total potential supply	19%
Potential natural gas supplies which because of permitting and logistical requirements cannot be recovered before January 1, 1985 regardless of price	
Offshore above 200 m (1) (Note: Also gas located beneath 200 m listed above)	193
Subtotal	193
Share of total potential supply	14%
Remaining potential natural gas which is economically recoverable under NGPA	
Onshore above 10,000 ft (5)	210
Subtotal	210
Share of total potential supply	15%

(1) Potential Gas Committee, Potential Supply of Natural Gas in the United States, December 31, 1980.

(2) Ibid. Mid-point high and low estimates presented by the Committee.

(3) National Petroleum Council (1980).

(4) Potential Gas Committee. Use of high estimate from range presented by the Committee reflects high incentive price now available under NGPA.

(5) GHK estimate based on Potential Gas Committee projection of the potential supply of gas located onshore above 15,000 ft and on recent drilling experience in major producing areas.

(6) FERC has proposed incentive price equal to 150% of NGPA Section 103 price.

(7) FERC has proposed incentive price equal to 200% of NGPA Section 103 price for gas drilled 200 feet or deeper.

Source: Oil & Gas Journal

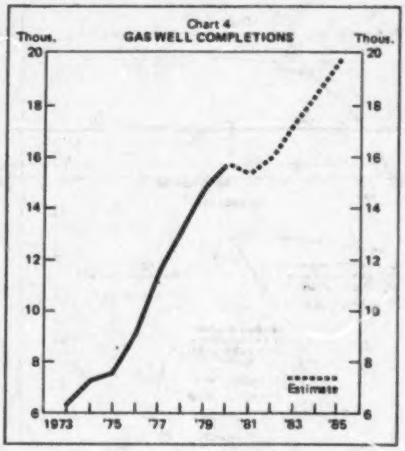


Chart 4
GAS WELL COMPLETIONS

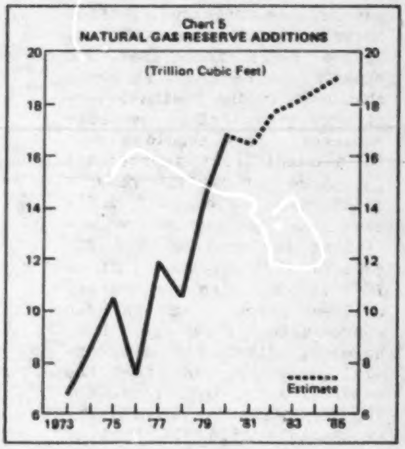


Chart 5
NATURAL GAS RESERVE ADDITIONS
(Trillion Cubic Feet)

tatives have estimated that the price of deregulated gas could be in a range of $4.00-$7.00 per MCF.

The Surplus

The current surplus (excess deliverability) of natural gas in the United States is estimated to be a range of 1.0-1.5 TCF. However, given the improved success ratios that are being experienced by exploration companies and the fact that demand is expected to increase modestly in 1982 because of weak economic conditions, that surplus could approximate the 1.5-2.0 TCF level by the end of the current year. In fact, until an acceleration in industrial consumption occurs, we believe that a substantial surplus of natural gas could prevail in the United States.

Pipeline Profits

We anticipate that federal regulation will continue to be generous to interstate pipelines during 1982. Because of the high cost of capital, returns should continue to trend upward. Increases in gas sales that have occurred during the last few years are expected to slow in the years ahead as gas prices rise under the NGPA schedule, and especially after gas prices are totally decontrolled. In an environment of declining sales, we would not anticipate any material decline in the profitability of jurisdictional pipelines. Should sales decline, we believe that the FERC would allow pipeline rates to rise high enough to offset lower sales, which was the case during the 1970's when the gas shortage was most acute.

Many intrastate pipelines are benefitting from the fact that several major oil companies can no longer meet the gas requirements of their customers. Consequently, we believe that most intrastate pipelines could experience an increase in sales in 1982, despite the economy, by supplying customers that are being curtailed by oil company gas pipelines. However, we would expect to see intrastate sales growth begin to decline as gas prices accelerate. In fact, in a deregulated environment, sales are expected to decline because of potential conservation and fuel switching. In order to improve sales after decontrol, nonjurisdictional pipelines may have to cut margins in order to bring the price of their supplies down to a marketable level. As a result, profits would suffer.

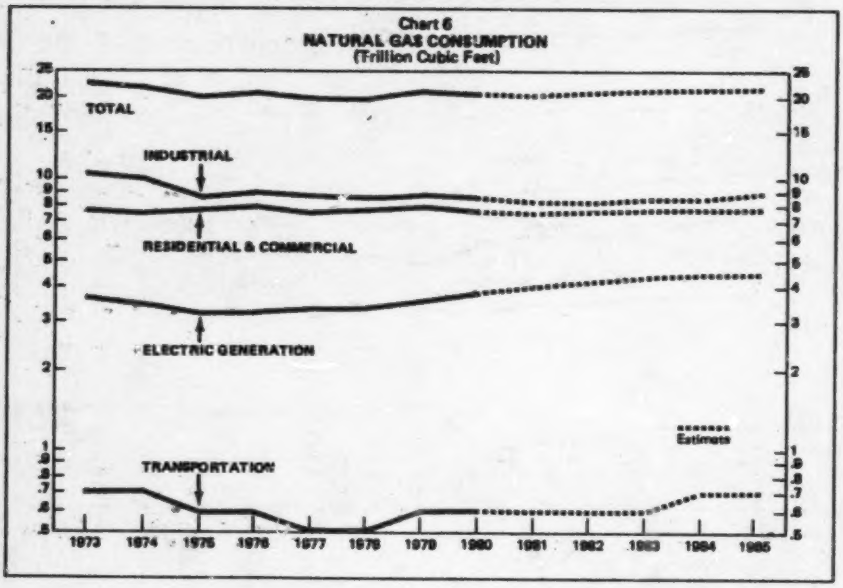
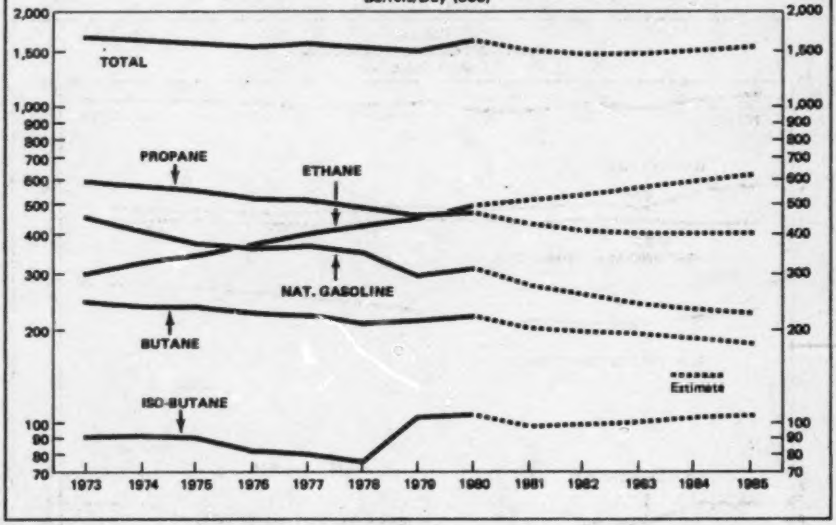


Chart 6
NATURAL GAS CONSUMPTION
(Trillion Cubic Feet)

Natural Gas Liquids

With the potential for natural gas decontrol approaching, natural gas processing companies are faced with altering their long-term strategies. The boom in processing plant construction that was ignited by decontrol of most liquid products in January of 1980 will probably grind to a halt by the end of 1982. The major reason is that as gas prices rise, the profit margin of the processing business declines. Profit erosion could accelerate to a degree in 1982 because the average cost of gas is expected to rise by about 30%; however, we doubt that those higher costs can be offset by higher prices. Petrochemical industry demand is slowing because of a weakening economy. As a result, we anticipate that 1982 liquids prices will be flat at approximately $0.45-$0.47 a gallon. Most natural gas companies involved in the processing business are expected to experience higher sales in 1982, primarily because the overall supply of liquids products is expected to decline. With refinery runs projected to be at low levels and the rapid depletion of their natural gas reserves expected to continue, the major oil companies (the principal producers of gas liquids) are expected to experience lower output once again in 1982.

Chart 7
NATURAL GAS LIQUIDS (FROM GAS PROCESSING PLANTS)
Barrels/Day (000)



SUPPLEMENTAL SUPPLIES

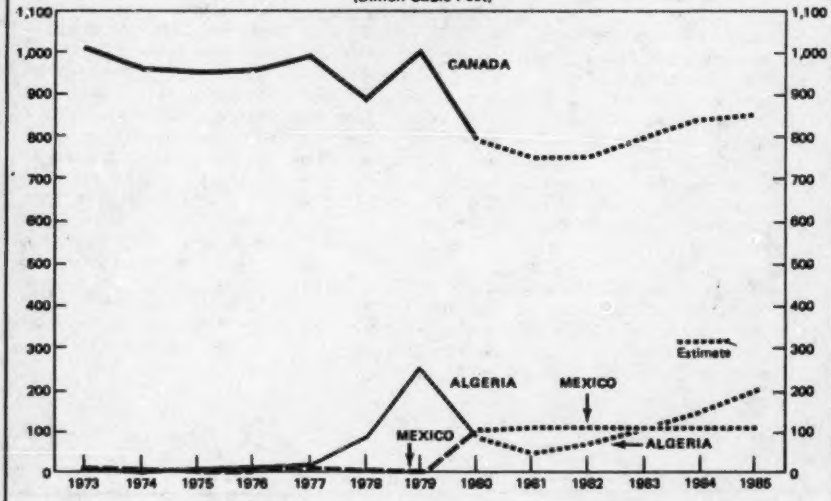
Decontrol is a very sensitive issue to supporters of supplemental natural gas projects. Supplemental sources may have a chance of being marketed effectively if decontrol is delayed and pipelines can roll in the high cost of supplemental gas with low cost, older gas supplies. However, once gas is decontrolled, supplemental gas may not be competitive in the market place. Consequently, natural gas decontrol could spell economic ruin for several supplemental gas supply projects. Below, we comment on the current outlook for several sources of supplemental gas supplies:

Liquified Natural Gas

Although Algeria has maintained a hardline policy toward LNG pricing, we believe that her attitude has softened somewhat. Both Trunkline Gas

Co. and the Southern Natural-Columbia Gas-Consolidated Natural consortium have reported a noticeable change in the Algerian position in their latest discussions with Algeria. We believe that three factors are contributing to Algeria's change of heart: (1) fear that the Soviet Union, which has decided to sell Siberian gas to West Germany at a price of $4.70 per MMBtu, will capture a growing portion of Algeria's potential market; (2) decline of world oil prices and the fact that in order to increase much needed revenues, more LNG must be sold and; (3) fear that new LNG projects (such as the recently announced Argentine-United States project) will be able to replace the LNG that was originally to be supplied by Algeria. Further evidence that Algeria's attitude is softening is the fact that, after a meeting between French President Francois Mitterand and Algerian President Chadli Benjedid, the French External Relations Ministry announced that a pricing agreement had been reached between the two countries, thus ending the 22-month-long pricing dispute. While the pricing formula must still be worked out, it appears as though Algeria has decided not to continue pressing for parity between the price of LNG and the price of oil, especially with world oil prices falling. Rather, the Algerian-French pricing structure is expected to be based on the price of industrial goods that are traded between the two countries. We do not believe that the Department of Energy (DOE) will appprove a price

Chart 8
UNITED STATES GAS IMPORTS
(Billion Cubic Feet)



structure subject to industrial goods prices, but we do believe, based on recent events, that the United States again could receive Algerian LNG in the not too distant future.

In view of the pricing dispute with Algeria, the DOE's attitude toward approving additional LNG projects has not been very constructive. Yet, that did not stop several U.S. companies (Natural Gas Pipeline Co. of America, Gulf Interstate Co. and Appalachian Co.) from announcing a $2.3 billion project for exporting Argentine LNG to the U.S. The project, which would involve the sale of 163 BCF a year for a 20-year period, is slated for completion in 1986. The $2.3 billion price tag includes the cost of building a liquefaction plant and export facilities in Argentina. No terminals will be constructed in the U.S. because existing terminals will be utilized for the project. The delivered price of the gas was not released, but considering the cost of the project, the financing costs, the small amount of gas to be delivered, the use of other companies' terminals and the price paid to producers, the price to U.S. consumers could approximate $15.00 per MMBtu. In light of the improved gas supply outlook in the U.S. and our estimate that the price of decontrolled gas in 1986 could be below $5.00 per MCF, we believe that winning DOE approval of this project will be very difficult.

The Alaskan Pipeline

The Alaskan Pipeline won a new lease on life as 1981 came to a close when Congress approved a controversial package of waivers to the 1976 law. Project sponsors claimed that the waivers were absolutely essential if financing for the project was to be procured. While it might appear as if the Alaskan pipeline's last major obstacle has been overcome, we believe that one problem still lies ahead, even with the waiver package in hand: the ultimate financing of the pipeline. If the project is completed as scheduled, the gas will be competing with decontrolled gas in the lower-48 states. The Alaskan gas is projected to cross the Canada-U.S. border at a price of $15.00 per MMBtu and reach the end-user at a price of $20.00 or more. There is a risk that this gas cannot be marketed even if it is rolled in with lower-cost gas. The risk also exists that distribution companies will encounter a great deal of difficulty from regulatory commissions in attempting to pass on costs of that magnitude to consumers. Consequently, it may be difficult to find enough lenders willng to take the risks associated with financing the $30-billion Alaskan portion of the project. We continue to believe that successful completion of the Alaskan project, as currently scheduled, is a long shot.

Canada

The current border price of Canadian gas is $4.94 per MMBtu, a price that is not competitive with domestically produced gas or alternative fuels. Pipeline and distribution companies that derive a substantial portion of their gas supplies from Canada have experienced a significant decline in sales because of conservation and fuel switching. Consequently, imports from Canada have declined during the last year. Imports from Canada could be up moderately in the next few years as the Eastern and Western legs of the Alaskan Pipeline commence operation. However, given the improved supply outlook in the lower-48 states, additional imports of Canadian gas are unnecessary at this point in time and may not be necessary in the future.

Synfuels

The enthusiasm that prevailed in 1980 for the rapid development of a synfuels industry is gradually diminishing. Although a substantial amount of progress has been made on the Great Plains coal gasification project, which won a $2.02 billion Energy Department loan guarantee, several other projects have been slowed or scrapped completely. The $3.0 billion (1980 dollars) Occidental Petroleum-Tenneco Cathedral Bluffs shale oil recovery project in western Colorado is being delayed. Costs have escalated much more rapidly than the sponsors had anticipated, interest rates have risen to extraordinarily high levels, and oil prices have finally stabilized. Substantially higher oil prices are required if the project's product can be competitively priced at a level that can produce a profit. A second project that has been slowed is the WyCoal Gas coal gasification project that was to start construction in 1982. However, two of the three original project sponsors have dropped out, and the project may die.

Stable oil prices and the eventual decontrol of natural gas could spell the demise of the fledgling synfuels industry. Table 1 indicates what prices various synfuels products would have to command (depending on the price of oil when construction of the project is started) for full equity recovery. The only project that is close to making economic sense is the Tosco II shale oil project, which has a projected product price of about $36.20 a barrel ($6.24 per MMBtu), assuming a $30.00 price of oil during the construction period.

Table 1
EQUITY RECOVERY PRICE FOR SYNFUEL PROJECTS

	Oil Price: $/Barrel				
	9	30	50	75	100
Process	Projected Synfuel Cost in New Plants: $/Barrel of Oil Equivalent				
H-Coal (Syncrude Mode)	27.82	61.78	81.60	100.72	117.72
EDS	25.10	55.57	73.88	90.72	105.76
Fischer-Tropsch	62.03	137.41	183.22	227.06	267.13
Lurgi/Methanation	25.15	54.82	72.54	90.47	106.87
Methanol Synthesis from Coal	34.66	76.75	101.77	125.93	147.59
Tosco II Shale Oil	17.11	36.18	49.97	63.75	76.80
Ethanol from Corn	59.03	101.66	125.52	152.76	177.24

Source: House Subcommittee on Energy Development & Applications

At some point, a synfuels industry will be necessary if we hope to replace conventional sources of energy. However, for the near term, because of abundant gas supplies, low gas prices, and stable oil prices, few synfuels projects can be expected to be profitable. We believe that those economics can be changed only by another substantial increase in the price of oil. Many companies believe that the current losses that synfuels projects will experience are justified by the longevity of reserves that can be produced by the facilities. The stock market, however, has a differing view on that subject.

OUTLOOK FOR NATURAL GAS STOCKS IN 1982

Natural gas stocks were disappointing investments in 1981, compared to a year of stellar performance in 1980. Gas stocks could perform much better in 1982 if the market continues to react favorably toward positive decontrol news. However, we believe that any positive performance based on decontrol could be short-lived. Our reasoning is based on the fact that many lines of business (nonjurisdictional pipelines, natural gas liquids, deep gas production) operated by natural gas companies could be impaired in the initial years of decontrol. If a stiff WPT is included in decontrol legislation, the negatives that we have highlighted would not be offset by increased profitability from old gas production. In Table 2 we have attempted to demonstrate the effect that we believe natural gas deregulation (based on our decontrol assumptions including a very stiff WPT on old gas production) would have on our projected growth rates for the companies that we follow. As a broad generalization, it is interesting to note that many of the companies that are in the negative and

Table 2
DECONTROL'S POSSIBLE EFFECT
ON OUR CURRENT PROJECTED GROWTH

Negative	Neutral	Positive
Central Lousiana Energy /A/	Arkla	Alaska Interstate
El Paso Co. /E/ /A/	ENSERCH	American Natural Res.
InterNorth	Houston Natural Gas*	Coastal Corp.
Mitchell Energy	Panhandle Eastern /A/	Columbia Gas /A/
Northwest Energy	Texas Gas Transmission*	Consolidated Natural Gas /A/
ONEOK	------	ENTEX
Pioneer Corp.	All Distribution Companies	Kansas Nebraska
Southern Union		MidCon Energy
Texas Oil & Gas		Mountain Fuel Supply
United Energy /A/		NICOR /A/
Valero Energy		Southern Natural Res. /A/
		Tenneco /A/
		Texas Eastern
		Transco /A/

* - modest negative effect.

neutral columns are companies that we consider to possess the best managements. Consequently, after an initial adjustment period, it would not surprise us to see many of those companies turn adversity to their advantage, a feat that well-managed companies are capable of accomplishing.

Given the uncertain outlook that we believe will exist until the decontrol issue has been resolved, we advise a conservative approach toward natural gas stocks in 1982. We encourage investors to buy high-quality issues with solid fundamentals only when the stocks have declined to the low end of their

Table 3

	Price 1/08/82	Ind. Div.	% Yield	EPS 1980	EPS 1981E	EPS 1982E	P/E 1981E	P/E 1982E	P/E Low	P/E Avg.	P/E Hi
Diversified											
Alaska Interstate	16 7/8	$0.60	3.6%	$6.21	$3.20	$3.85	5.3	4.4	6.0	9.0	12.0
Central La. Energy	30 5/8	0.48	1.6	3.95	4.10	5.00	7.5	6.1	5.0	8.0	11.0
Coastal Corp.	35 5/8	0.40	1.1	4.52	2.00	3.75	17.8	9.5	4.0	6.5	9.0
ENSERCH Corp.	23 1/4	1.36	5.9	2.82	3.60	4.40	6.5	5.3	6.0	8.5	11.0
Houston Natural Gas	41	1.50	3.7	5.06	5.94a	7.30	6.9	5.6	6.0	8.0	10.0
MidCon Corp.	26	2.08	8.0	3.78	3.74a	4.50	7.0	5.8	6.0	7.0	8.0
Mitchell Energy*	18 7/8	0.24	1.3	2.10	2.50	3.10	7.6	6.1	6.0	8.5	11.0
Panhandle Eastern	33 5/8	2.00	6.0	4.86	6.45	7.50	5.2	4.5	5.0	6.5	8.0
Pioneer Corp.	27 7/8	1.00	3.6	2.44	3.05	4.30	9.1	6.5	6.0	8.0	10.0
Sonat Inc.	30 1/2	1.10	3.6	6.85	4.05	5.00	7.5	6.1	6.0	7.5	9.0
Tenneco, Inc.	31 1/4	2.60	8.3	5.95	5.90	6.50	5.3	4.8	6.0	7.5	9.0
Texas Eastern	53	3.80	7.2	8.72	8.20	9.15	6.5	5.8	6.0	7.0	8.0
Texas Gas Trans.	33 3/4	1.92	5.7	5.17	6.45	6.50	5.2	5.2	5.0	7.0	9.0
Texas Oil & Gas	33 1/2	0.24	0.7	1.48	2.01a	3.15	16.7	10.6	7.0	11.5	16.0
Transco Cos.	44	1.60	3.6	4.72	5.35	6.75	8.2	6.5	5.0	8.0	11.0
United Energy Res.	38	1.92	5.1	6.38	7.80	8.75	4.9	4.3	4.0	5.5	7.0
Valero Energy	22	0.32	1.5	2.44	4.00	4.50	5.5	4.9	5.0	6.5	8.0
Pipeline											
American Nat. Res.	36	2.84	7.9	4.59	6.00	7.25	6.0	5.0	7.0	8.0	9.0
Arkla, Inc.	18 5/8	0.80	4.3	1.46	1.75	2.15	10.7	8.7	7.0	9.5	12.0
Columbia Gas	31 1/2	2.70	8.6	5.02	5.00	5.50	6.3	5.7	6.0	7.0	8.0
Consolidated Natural	48 3/4	3.76	7.7	5.73	6.50	7.15	7.5	6.8	6.0	7.0	8.0
El Paso Co.	27 3/8	1.48	5.4	2.30	3.15	4.00	8.7	6.9	6.0	7.5	9.0
Entex	13 1/2	1.00	7.4	1.87	2.03a	2.50	6.7	5.4	6.0	7.5	9.0
InterNorth	29 7/8	2.12	7.1	4.70	5.50	5.80	5.4	5.2	5.0	6.5	8.0
Kansas Nebraska	26 3/8	1.48	5.6	2.68	3.05	3.35	8.7	7.9	6.0	8.0	10.0
Mountain Fuel	33	2.44	7.4	4.10	2.85	3.30	11.6	10.0	7.0	9.5	12.0
NICOR	33	2.84	8.6	5.00	5.45	6.10	6.1	5.4	6.0	7.0	8.0
Northwest Energy	20 1/8	1.20	6.0	3.23	3.90	4.30	5.2	4.7	4.0	6.0	8.0
ONEOK, Inc.	28 1/4	2.20	7.8	4.24	4.42a	5.50	6.4	5.1	5.0	7.0	9.0
Southern Union Co.	21	1.56	7.4	3.70	3.85	4.70	5.5	4.5	5.0	6.5	8.0

* - Fiscal years end 1981, 1982E and 1983E, respectively.
a - Actual.

five-year average p/e ratio ranges. Conversely, when issues advance to the higher end of those ranges, we would advise lightening positions. Table 3 presents a simple p/e ratio model that we have published in recent months as a guide to investors. Several high-quality issues with solid fundamentals that currently stand out in the model (on an intermediate-term basis) include ENSERCH, Houston Natural Gas, and Texas Gas Transmission. Although Transco has become less attractive on the model in recent weeks because of price appreciation, we believe it is one of the best situated companies to take advantage of decontrol as well as deep-water gas incentive pricing.

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CHANGES SINCE DECEMBER 1981 NATURAL GAS MONTHLY

Changes in 1981 Earnings Estimates

Company	From	To	Comment
Central Louisiana Energy	$4.25	$4.10	Lower gas sales than anticipated.
Panhandle Eastern Corp.	6.75	6.45	Establishment of helium reserve.

Changes in 1982 Earnings Estimates

Company	From	To	Comment
Central Louisiana Energy	$5.30	$5.00	Lower gas liquids prices.
ONEOK, Inc.	5.10	5.50	Stronger utility earnings than expected.
Texas Gas Transmission	7.00	6.50	Lower production rates.
Valero Energy	5.00	4.50	Lower gas liquids prices.

Changes in 1983 Earnings Estimates

Company	From	To	Comment
ONEOK, Inc.	$5.80	$6.25	Higher gas production than expected and change in oil & gas accounting methods.

QRQ Code: 1=Buy; 2=OK to Buy; 3=Neutral; 7=Qualified for Income, High Yield; 9=Qualified for Income, Low Yield.

APPENDIX

18 / Natural Gas Industry

TABLE A-1

Earnings & Price Data

	GRQ	Price 1/08/82	52 Week Range	Latest Available Book Value	Market Price/ Book Value	Fiscal Year	EPS 1979	EPS 12 Months 9/30/81	EPS 1980	EPS 1981E	EPS 1982E	Average Return on Equity %	Past 5 Yr. EPS Growth Rate %	Implied Growth Rate %	P/E Ratio 1981E	P/E Ratio 1982E	1981E P/E/ S&P 500 P/E	1982E P/E/ S&P 500 P/E	5 Yr. Avg. P/E/ Avg. S&P 500 P/E
NATURAL GAS - DIVERSIFIED																			
Alaska Interstate	3-1-9	16 7/8	35 - 16 1/2	$19.98	0.86	Dec.	$1.31	$(0.12)	$6.21	$3.20	$3.85	25.2	42.7	20.5	5.3	4.4	0.61	0.58	1.00
Central Louisiana Energy /A/	2-1-9	30 5/8	40 1/4 - 30 3/8	19.24	1.59	Dec.	2.88	4.08	3.06	4.10	5.00	30.4	24.5	27.0	7.5	6.1	0.87	0.81	0.83
Coastal Corp.	2-2-9	35 5/8	59 1/2 - 25 1/4	22.14	1.62	Dec.	4.59	0.21	4.52	2.00	3.75	0.9	12.6	0.7	17.8	9.5	2.07	1.25	0.56
ENSERCH Corp.	1-1-9	23 1/4	35 1/8 - 22 5/8	16.52	1.41	Dec.	1.90	3.47	2.82	3.60	4.40	22.7	20.2	14.0	6.5	5.3	0.75	0.70	0.99
Houston Natural Gas	1-1-9	41	55 3/8 - 37 3/4	27.46	1.49	July	3.52	6.37***	5.06	5.9A	6.90	25.5	15.0	19.0	6.9	5.9	0.80	0.78	0.89
MidCon Corp.	2-2-7	26	N.A.	31.57	0.82	Sept.	3.51	3.74	3.78	3.74A	4.50	12.3	N.A.	5.5	7.0	5.8	0.81	0.76	N.A.
Mitchell Energy	1-2-9	18 7/8	42 1/2 - 16 3/4	7.43	2.54	Jan.	1.27	2.33***	2.10	2.50	3.10	41.3	38.0	37.5	7.6	6.1	0.88	0.80	0.83
Panhandle Eastern Corp. /A/	1-1-7	33 5/8	46 3/4 - 30 3/8	31.08	1.08	Dec.	4.01	6.41	4.86	6.45	7.50	22.8	15.0	16.0	5.2	4.5	0.61	0.59	0.78
Pioneer Corp.	2-1-9	27 7/8	33 3/8 - 21 5/8	9.46	2.95	Dec.	1.79	2.92	2.44	3.05	4.30	34.7	20.3	23.0	9.1	6.5	1.06	0.85	0.89
Sonat Inc.	1-1-9	30 1/2	37 1/4 - 26 5/8	22.27	1.37	Dec.	2.72	3.84	3.43	4.05	5.00	18.4	14.0	13.0	7.5	6.1	0.88	0.80	0.83
Tenneco Inc. /A/	2-3-7	31 1/4	51 5/8 - 29 7/8	38.00	0.82	Dec.	5.16	5.66	5.95	5.90	6.50	15.7	12.1	9.0	5.3	4.8	0.62	0.63	0.83
Texas Eastern Corp.	2-1-9	53	79 3/8 - 43 3/4	48.73	1.09	Dec.	7.04	8.67	8.72	8.20	9.15	20.2	22.7	11.0	6.5	5.8	0.75	0.76	0.83
Texas Gas Transmission	1-1-7	33 3/8	41 3/4 - 30 1/2	29.18	1.16	Dec.	3.67	5.66	5.17	6.45	6.50	22.2	15.3	15.5	5.2	5.1	0.61	0.68	0.83
Texas Oil & Gas Corp.	2-1-9	33 1/2	41 3/4 - 18 3/8	7.34	4.56	Aug.	1.02	2.01**	1.48	2.08A	2.75	31.4	34.0	27.5	16.7	12.2	1.94	1.60	1.11
Transco Cos. /A/	1-1-9	44	57 7/8 - 37 1/4	25.69	1.71	Dec.	2.96	5.06	4.72	5.35	6.75	22.1	19.2	15.5	8.2	6.5	0.96	0.86	0.83
United Energy Resources /A/	2-1-9	38	54 1/8 - 37 1/2	30.28	1.25	Dec.	4.55	7.56	6.38	7.80	8.75	29.0	29.7	22.0	4.9	4.3	0.57	0.57	0.58
Valero Energy	1-1-9	22	40 3/8 - 20 1/4	13.13	1.68	Dec.	0.66	3.62	2.44	4.00	4.50	32.4	N.A.	30.0	5.5	4.9	0.64	0.64	N.A.
NATURAL GAS - PIPELINE																			
American Natural Resources	2-2-7	36	49 3/4 - 34 1/4	46.82	0.77	Dec.	5.13	6.57	4.59	6.00	7.25	14.4	-	7.5	6.0	5.0	0.70	0.65	0.88
Arkla, Inc.	2-1-9	18 5/8	20 3/4 - 8 3/4	8.67	2.15	Dec.	1.21	1.70	1.46	1.75	2.15	20.8	10.8	11.0	10.7	8.7	1.24	1.14	0.94
Columbia Gas /A/	2-2-7	31 1/2	41 1/2 - 27 7/8	38.80	0.85	Dec.	4.39	5.12	5.02	5.00	5.50	14.4	11.3	6.5	6.3	5.7	0.73	0.75	0.89
Consolidated Natural Gas /A/	3-2-7	48 3/4	55 3/4 - 43	52.97	0.92	Dec.	6.30	7.62	5.73	6.50	7.15	14.9	9.9	6.5	7.5	6.8	0.87	0.90	0.78
El Paso Co. /A,E/	1-1-7	27 3/8	28 1/8 - 19 1/4	9.78	2.61	Dec.	2.99	2.90	2.30	3.15	4.15	21.1	4.1	11.0	8.7	6.6	1.01	0.87	1.44
Entex	2-1-7	13 1/2	16 7/8 - 10 1/8	9.60	1.41	June	1.98	2.17	1.87	2.03A	2.25	24.1	19.3	12.0	6.7	6.0	0.77	0.79	0.83
InterNorth	2-1-7	29 7/8	43 1/2 - 27 1/2	29.12	1.03	Dec.	4.09	5.07	4.70	5.50	5.80	18.5	10.1	11.5	5.4	5.2	0.63	0.68	0.72
Kansas Nebraska Natural Gas	3-3-7	26 3/8	40 - 23 1/8	17.67	1.49	Dec.	2.45	2.80	2.68	3.05	3.35	16.3	10.2	8.5	8.7	7.9	1.01	1.04	0.89
Mountain Fuel Supply	3-2-7	33	49 3/4 - 30 1/2	32.01	1.03	Dec.	3.50	3.06	4.10	2.85	3.30	10.2	8.4	1.5	11.6	10.0	1.35	1.32	1.17
Nicor Inc. /A/	2-2-7	33	43 1/2 - 31 1/8	36.37	0.92	Dec.	4.77	5.12	5.00	5.45	6.10	14.6	9.0	7.0	6.1	5.4	0.70	0.71	0.78
Northwest Energy Co.	3-3-7	20 1/8	32 1/4 - 15 5/8	21.01	0.96	Dec.	3.03	3.93	3.23	3.90	4.30	20.4	8.7	14.0	5.2	4.7	0.60	0.62	0.67
ONEOK, Inc.	1-1-7	28 1/4	41 - 27 1/8	22.41	1.26	Aug.	3.10	4.95**	3.82	4.42A	5.50	18.9	8.6	9.5	6.4	5.1	0.74	0.68	0.83
Southern Union Co.	2-1-7	21	32 5/8 - 20 1/2	19.25	1.09	Dec.	3.25	3.73	3.70	3.85	4.70	20.6	10.7	12.0	5.5	4.8	0.63	0.59	0.94
NATURAL GAS - DISTRIBUTION																			
Atlanta Gas Light /A,B/	2-3-7	15 1/8	16 1/4 - 12 5/8	26.18	0.58	Sept.	2.61	2.57	3.10	2.57A	3.20	12.1	0.5	4.0	5.9	4.7	0.68	0.62	0.67
Bay State Gas	1-3-7	19 3/8	22 1/2 - 17 7/8	27.39	0.71	Dec.	3.82	2.48	3.46	3.60	3.75	8.9	2.5	3.0	5.4	5.2	0.63	0.68	0.72
Brooklyn Union Gas /A/	1-2-7	23 3/4	25 7/8 - 19 7/8	27.59	0.86	Sept.	3.40	4.05	3.61	4.05A	4.50	15.2	13.3	5.0	5.9	5.3	0.68	0.69	0.78
Gas Service Co.	3-3-7	10	11 - 9 1/4	19.10	0.52	Dec.	2.62	1.64	1.35	1.35	1.65	8.7	-3.6	0.5	7.4	6.1	0.86	0.80	0.89
National Fuel Gas	1-2-7	29 3/8	36 3/8 - 24 3/4	45.76	0.64	Sept.	4.51	5.93	4.30	5.93A	6.50	13.5	5.9	7.0	5.0	4.5	0.58	0.59	0.78
Northwest Natural Gas /B/	2-3-7	11 7/8	15 7/8 - 10 3/4	13.44	0.88	Dec.	1.88	1.52	1.40	1.70	2.00	11.5	3.0	3.0	7.0	5.9	0.81	0.78	0.89
Pacific Lighting	2-2-7	25 3/8	29 7/8 - 19 7/8	31.88	0.82	Dec.	3.80	5.31	4.08	4.75	4.50	17.5	12.0	7.0	5.4	5.7	0.63	0.75	0.72
Piedmont Natural Gas /A/	3-3-7	18 1/8	24 - 17	23.67	0.77	Oct.	2.18	3.23***	3.30	3.23A	3.50	9.4	6.8	4.5	5.6	5.2	0.65	0.60	0.78
Washington Gas Light	3-3-7	30 1/8	43 3/8 - 21 3/8	30.96	0.98	Dec.	2.65	3.38	3.51	3.35	3.75	10.4	18.7	2.0	9.1	8.1	1.05	1.07	0.94
WICOR, Inc.	2-3-7	18 1/8	25 3/8 - 16 7/8	26.73	0.68	Dec.	3.31	2.84	2.80	2.90	3.25	12.2	7.4	3.0	6.3	5.6	0.73	0.73	0.83

GRQ Code - Buy (1), OK to Buy (2), Neutral/(3), Qualified for Income: Hi Yield (7), Unqualified for Income (8), Qualified for Income: Low Yield (9).

A - Actual.
** - 8/31/81
*** - 10/31/81
N.A. - Not Available.

TABLE A-2

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	Ind. Div.	Div. Rate/ Book Value %	Curr. Yield %	Proj. Div. Incr.	Proj. Date Next Div. Incr.	Proj. Div. Growth 5 Yrs.	1981E Payout Ratio %	Payout Ratio/ Group Payout Ratio	Payout Ratio/ Ind. Payout Ratio - e
NATURAL GAS - DIVERSIFIED									
Alaska Interstate	$0.60	3.0	3.6	$0.70	2/25/82	15.0%	18.8	0.69	0.39
Central Louisiana Energy	0.48	2.5	1.6	0.56	1/22/82	15.0	11.7	0.43	0.24
Coastal Corp.	0.40	1.8	1.1	0.40	5/04/82	20.0	20.0	0.73	0.41
ENSERCH Corp.	1.36	8.2	5.9	1.50	1/28/82	10.0	37.8	1.38	0.78
Houston Natural Gas	1.50	5.8	3.7	1.70	3/05/82	15.0	25.3	0.92	0.52
MidCon Corp.	2.08	6.6	8.0	2.16	12/02/82	4.0	55.6	2.04	1.15
Mitchell Energy	0.24	3.2	1.3	0.30	2/02/82	25.0	9.6	0.35	0.20
Panhandle Eastern Corp.	2.00	6.4	6.0	2.20	1/27/82	10.0	31.0	1.14	0.64
Pioneer Corp.	1.00	10.6	3.6	1.20	11/03/82	10.0	32.8	1.20	0.66
Sonat Inc.	1.10	4.9	3.6	1.20	7/30/82	15.0	27.2	0.99	0.56
Tenneco Inc.	2.60	6.8	8.3	2.80	5/25/82	8.0	44.1	1.61	0.91
Texas Eastern Corp.	3.80	7.8	7.2	4.00	7/21/82	8.0	46.3	1.70	0.96
Texas Gas Transmission	1.92	6.6	5.7	2.08	8/16/82	8.0	29.8	1.09	0.62
Texas Oil & Gas Corp.	0.24	3.3	0.7	0.30	3/25/82	30.0	11.9	0.44	0.25
Transco Cos.	1.60	6.2	3.6	1.72	1/12/82	10.0	29.9	1.10	0.62
United Energy Resources	1.92	6.3	5.1	2.18	2/18/82	8.0	24.6	0.90	0.51
Valero Energy	0.32	2.4	1.5	0.44	4/22/82	45.0	8.0	0.29	0.17
NATURAL GAS - PIPELINE									
American Natural Resources	2.84	6.0	7.9	2.94	3/17/82	6.0	47.3	0.95	0.98
Arkla, Inc.	0.80	9.2	4.3	0.90	7/08/82	12.0	45.7	0.92	0.94
Columbia Gas	2.70	7.0	8.6	2.84	1/20/82	5.0	54.0	1.09	1.12
Consolidated Natural Gas	3.76	7.1	7.7	3.88	12/08/82	7.0	57.9	1.16	1.20
El Paso Co.	1.48	15.1	5.4	1.58	5/07/82	8.0	47.0	0.94	0.97
Entex	1.00	10.4	7.4	1.10	7/22/82	15.0	49.3	0.99	1.02
InterNorth	2.12	7.3	7.1	2.32	7/13/82	10.0	38.6	0.77	0.80
Kansas Nebraska Natural Gas	1.48	8.4	5.6	1.60	11/12/82	5.0	48.5	0.97	1.00
Mountain Fuel Supply	2.44	7.6	7.4	2.56	2/11/82	5.0	85.6	1.72	1.77
Nicor Inc.	2.84	7.8	8.6	3.00	3/10/82	5.0	52.1	1.05	1.08
Northwest Energy Co.	1.20	5.7	6.0	1.40	4/30/82	7.0	30.8	0.62	0.64
ONEOK, Inc.	2.20	9.8	7.8	2.40	4/16/82	8.0	49.8	1.00	1.03
Southern Union Co.	1.56	8.1	7.4	1.68	10/25/82	7.0	40.5	0.81	0.84
NATURAL GAS - DISTRIBUTION									
Atlanta Gas Light	1.68	6.4	11.1	1.80	2/09/82	5.0	65.4	0.96	1.35
Bay State Gas	2.32	8.5	12.0	2.44	3/09/82	4.0	64.4	0.95	1.33
Brooklyn Union Gas	2.70	9.8	11.4	2.90	12/12/82	7.0	66.7	0.98	1.38
Gas Service Co.	1.28	6.7	12.8	1.28	1/19/82	2.0	94.8	1.39	1.96
National Fuel Gas	2.90	6.3	9.9	3.06	6/18/82	5.0	48.9	0.72	1.01
Northwest Natural Gas	1.28	9.5	10.8	1.38	4/15/82	5.0	75.3	1.11	1.56
Pacific Lighting	2.76	8.7	10.7	2.86	6/01/82	4.0	58.1	0.85	1.20
Piedmont Natural Gas	1.76	7.4	9.7	1.86	2/26/82	5.0	54.5	0.80	1.13
Washington Gas Light	2.64	8.5	8.7	2.76	3/24/82	4.0	78.8	1.16	1.63
WICOR, Inc.	2.14	8.0	11.8	2.24	7/14/82	4.0	73.8	1.08	1.53

e - Industry is comprised of gas companies followed by M.L.

TABLE A-3

	---Miscellaneous Data---								
	LTD % of Capital	Latest Tax-Rate %	Latest Interest Coverage	Shares Out-stand. (MM)	% Held by Instits.	No Instit. Holders	Market Capital-ization ($MM)	Average Daily Trading Volume	Beta 11/30/81
NATURAL GAS - DIVERSIFIED									
Alaska Interstate	52.8	58.6	5.6	12.9	18.7	43	217.8	28,260	1.49
Central Louisiana Energy	19.7	46.9	15.4	21.7	49.4	155	664.7	26,790	1.36
Coastal Corp.	55.2	N.A.	0.7	21.7	33.1	91	773.2	79,060	N.A.
ENSERCH Corp.	35.3	38.1	5.0	53.0	49.9	222	1,232.3	92,090	1.16
Houston Natural Gas	21.3	37.0	8.7	40.1	44.7	223	1,644.1	30,880	1.35
MidCon Corp.	35.0	40.5	2.7	29.4	N.A.	N.A.	764.4	6,350	N.A.
Mitchell Energy	61.7	38.5	4.8	47.9	10.5	70	904.4	42,990	1.55
Panhandle Eastern	47.7	31.1	3.8	40.4	43.7	208	1,358.7	24,910	1.23
Pioneer Corp.	32.7	41.9	7.3	37.2	34.3	159	1,037.1	47,950	1.26
Sonat Inc.	37.0	42.7	4.6	40.9	44.0	240	1,247.5	36,840	1.02
Tenneco Inc.	45.5	43.1	2.3	128.3	32.5	550	4,009.4	160,290	1.20
Texas Eastern Corp.	40.1	47.8	3.1	25.5	49.1	218	1,351.5	17,480	1.27
Texas Gas Transmission	34.1	44.1	5.1	20.3	51.6	146	685.1	29,450	1.37
Texas Oil & Gas Corp.	45.5	41.0	6.6	95.3	58.5	332	3,192.6	76,550	1.37
Transco Cos.	54.4	45.9	2.9	23.5	32.3	161	1,034.0	23,200	1.31
United Energy Resources	23.2	37.1	4.7	27.8	35.0	151	1,056.4	28,990	1.10
Valero Energy	45.4	28.6	4.9	22.3	36.2	89	490.6	51,900	N.A.
NATURAL GAS - PIPELINE									
American Natural Resources	46.3	38.4	1.6	23.4	44.0	217	842.4	23,860	1.03
Arkla, Inc.	39.6	42.2	4.9	50.3	36.7	153	937.1	37,120	1.11
Columbia Gas	48.0	36.6	1.8	34.8	24.0	169	1,096.2	26,090	0.79
Consolidated Natural Gas	38.3	41.0	2.8	19.8	22.2	155	965.3	9,770	1.01
El Paso Co.	62.2	47.3	2.5	48.3	33.9	169	1,322.5	31,510	1.26
Entex	54.1	21.7	1.5	21.1	24.7	51	284.9	12,800	1.22
InterNorth	40.7	39.6	4.6	44.2	51.8	245	1,320.7	49,890	1.25
Kansas Nebraska Natural Gas	40.3	45.0	3.1	7.6	12.5	35	200.5	2,610	1.08
Mountain Fuel Supply	41.8	45.3	3.8	7.7	39.8	78	254.1	7,930	0.96
Nicor Inc.	36.8	39.5	6.2	21.5	26.1	136	709.5	11,510	1.04
Northwest Energy Co.	47.7	23.1	2.2	16.2	13.0	60	326.1	28,090	1.48
ONEOK, Inc.	43.7	43.8	4.6	11.5	12.6	70	324.9	14,510	1.22
Southern Union Co.	38.1	44.3	5.0	10.2	29.0	51	214.2	8,730	1.13
NATURAL GAS - DISTRIBUTION									
Atlanta Gas Light	51.4	40.7	2.0	4.5	15.3	16	68.1	2,500	0.74
Bay State Gas	45.1	49.6	3.3	2.3	2.8	7	44.6	1,240	0.63
Brooklyn Union Gas	44.4	30.5	2.4	8.0	9.2	42	190.0	4,580	0.55
Gas Service Co.	42.9	29.7	1.6	4.2	8.9	24	42.0	4,130	0.58
National Fuel Gas	44.4	31.9	2.2	5.1	2.3	20	149.8	2,020	0.66
Northwest Natural Gas	42.9	26.9	2.5	8.0	11.7	34	95.0	22,000	1.08
Pacific Lighting	46.8	40.1	3.0	26.3	26.7	69	677.2	10,690	0.54
Piedmont Natural Gas	46.9	43.7	3.0	3.0	8.4	8	54.4	2,490	0.61
Washington Gas Light	47.4	28.2	2.1	5.5	8.8	28	167.1	7,330	0.56
WICOR, Inc.	41.8	48.4	4.0	4.1	13.7	34	74.3	2,140	0.72

N.A. - Not Available.

TABLE A-4
CONSUMPTION OF ENERGY
(Quadrillion Btu (a)

		Natural Gas (Dry)	Petroleum	Coal	Hydro-electric Power	Nuclear Electric Power	Net Imports of Coal Coke	Other	Total Energy Consumed
1973	Total	22.512	34.840	13.300	3.010	0.910	(0.008)	0.046	74.609
1974	Total	21.732	33.455	12.876	3.309	1.272	0.059	0.056	72.759
1975	Total	19.948	32.731	12.823	3.219	1.900	0.014	0.072	70.707
1976	Total	20.345	35.175	13.733	3.066	2.111	0.000	0.081	74.510
1977	Total	19.931	37.122	13.965	2.515	2.702	0.015	0.082	76.332
1978	Total	20.000	37.965	13.846	3.164	2.977	0.131	0.068	78.150
1979	January	2.477	3.506	1.359	0.282	0.299	0.004	0.007	7.934
	February	2.250	3.275	1.209	0.241	0.279	0.003	0.006	7.263
	March	1.921	3.291	1.218	0.292	0.262	0.002	0.008	6.993
	April	1.627	2.873	1.146	0.285	0.198	0.005	0.007	6.143
	May	1.459	3.032	1.200	0.324	0.162	0.011	0.007	6.194
	June	1.336	2.931	1.244	0.281	0.173	0.010	0.007	5.983
	July	1.358	2.920	1.341	0.258	0.224	0.008	0.007	6.117
	August	1.370	3.091	1.349	0.242	0.261	0.009	0.008	6.330
	September	1.357	2.868	1.204	0.218	0.235	0.008	0.007	5.896
	October	1.590	3.096	1.237	0.231	0.225	0.004	0.008	6.390
	November	1.805	3.018	1.243	0.254	0.207	0.000	0.008	6.535
	December	2.116	3.223	1.360	0.258	0.222	0.002	0.009	7.189
	TOTAL	20.666	37.123	15.109	3.166	2.748	0.066	0.089	78.968
1980	January	2.327	3.177	1.410	0.285	0.213	0.003	0.008	7.423
	February	2.238	2.998	1.325	0.242	0.208	(0.001)	0.008	7.018
	March	2.143	2.961	1.307	0.275	0.216	(0.003)	0.008	6.906
	April	1.601	2.756	1.169	0.289	0.202	(0.005)	0.008	6.021
	May	1.383	2.749	1.173	0.323	0.198	(0.006)	0.010	5.831
	June	1.279	2.672	1.245	0.309	0.197	(0.004)	0.009	5.709
	July	1.328	2.719	1.401	0.276	0.226	(0.004)	0.010	5.957
	August	1.272	2.679	1.393	0.234	0.262	(0.003)	0.011	5.847
	September	1.326	2.727	1.272	0.213	0.254	(0.004)	0.010	5.798
	October	1.574	2.880	1.238	0.207	0.264	(0.006)	0.011	6.168
	November	1.820	2.752	1.261	0.220	0.226	(0.002)	0.011	6.288
	December	2.201	3.126	1.407	0.253	0.238	(0.001)	0.012	7.235
	TOTAL	20.495	34.196	15.603	3.125	2.704	(0.037)	0.114	76.201
1981	January	2.303	3.115	1.491	0.254	0.252	0.000	0.011	7.426
	February	1.939	2.604	1.322	0.239	0.233	(0.001)	0.010	6.346
	March	1.946	2.697	1.333	0.236	0.237	(0.003)	0.011	6.458
	April	1.544	2.518	1.207	0.237	0.222	(0.001)	0.010	5.737
	May	1.490	2.588	1.213	0.273	0.212	0.000	0.010	5.786
	June	1.364	2.631	1.317	0.296	0.228	(0.004)	0.010	5.841
	July	1.395	2.718	1.501	0.283	0.249	0.000	0.011	6.157
	August	1.358	2.633	1.437	0.246	0.290	0.000	0.011	5.976
	September	1.338	2.538	1.309	0.206	0.263	(0.002)	0.011	5.662

(a) A quadrillion Btu's equal approximately one trillion cubic feet (TCF) of natural gas.
Source: U.S. Department of Energy (DOE)

TABLE A-5
NATURAL GAS PRODUCTION AND CONSUMPTION
(Billion Cubic Feet)

		Domestic Consumption	Marketed	Dry	Domestic Producer Sales to Major Interstate Pipelines	Imports	Exports
1973	Total	22,049	22,648	21,731	12,067	1,033	77
1974	Total	21,223	21,601	20,714	11,462	959	77
1975	Total	19,538	20,109	19,237	10,652	953	73
1976	Total	19,946	19,952	19,098	10,140	964	65
1977	Total	19,521	20,025	19,163	9,883	1,011	56
1978	Total	19,627	19,974	19,122	9,911	966	53
1979	January	2,426	1,771	1,702	890	102	6
	February	2,204	1,656	1,591	819	97	5
	March	1,881	1,755	1,686	907	113	5
	April	1,594	1,692	1,625	871	106	5
	May	1,429	1,716	1,648	877	104	5
	June	1,309	1,643	1,578	812	101	5
	July	1,330	1,662	1,596	851	104	6
	August	1,342	1,689	1,622	880	97	4
	September	1,329	1,635	1,570	820	98	5
	October	1,557	1,705	1,638	888	107	3
	November	1,768	1,724	1,656	921	114	3
	December	2,072	1,823	1,751	960	110	4
	TOTAL	20,241	20,471	19,663	10,496	1,253	56
1980	January	2,279	1,817	1,745	981	118	6
	February	2,192	1,705	1,638	898	108	5
	March	2,099	1,827	1,754	960	109	5
	April	1,568	1,680	1,601	897	77	3
	May	1,355	1,692	1,625	859	70	3
	June	1,253	1,583	1,520	794	61	3
	July	1,301	1,613	1,549	825	61	3
	August	1,246	1,572	1,510	828	60	3
	September	1,299	1,577	1,515	800	60	5
	October	1,542	1,647	1,582	894	75	5
	November	1,783	1,651	1,586	906	88	3
	December	2,156	1,794	1,723	963	98	5
	TOTAL	20,073	20,145	19,348	10,605	985	49
1981	January	2,256	1,769	1,699	965	86	5
	February	1,899	1,592	1,529	873	79	3
	March	1,906	1,745	1,676	945	73	4
	April	1,512	1,675	1,609	905	68	3
	May	1,459	1,720	1,652	909	61	5
	June	1,336	1,666	1,600	877	63	5
	July	1,366	1,697	1,630	889	64	3
	August	1,330	1,690E	1,630E	850E	62	4
	September	1,310	1,620E	1,560E	825E	67	4
	October	1,560	1,680E	1,610E	900E	80	5

SOURCE: DOE

TABLE A-6
Maximum Lawful Prices
($/MM Btu)

NGPA Section	Category of Gas	Dec. 1978	Dec. 1979	Jan. 1980	Feb. 1980	Mar. 1980	Apr. 1980	May 1980	June 1980	July 1980	Aug. 1980	Sept. 1980	Oct. 1980	Nov. 1980	Dec. 1980
102	New natural gas														
	Certain OCS gas	$2.078	$2.336	$2.358	$2.381	$2.404	$2.428	$2.453	$2.478	$2.504	$2.532	$2.560	$2.588	$2.614	$2.640
103	New onshore production wells	1.969	2.143	2.158	2.173	2.188	2.204	2.221	2.238	2.255	2.274	2.293	2.312	2.329	2.346
105(b)(1)-(B)	Intrastate rollover gas (alternative maximum lawful price)a/	1.121	1.221	1.229	1.238	1.247	1.256	1.266	1.276	1.286	1.297	1.308	1.319	1.329	1.339
107(c)(5)	High-cost gas	2.078	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/
	Gas from tight formations	b/	4.286	4.316	4.346	4.376	4.408	4.442	4.476	4.510	4.546	4.586	4.628	4.656	4.6921
108	Stripper well	2.224	2.499	2.523	2.548	2.573	2.598	2.625	2.652	2.680	2.710	2.740	2.770	2.798	2.826
109	Not otherwise covered	1.630	1.774	1.786	1.799	1.812	1.825	1.839	1.853	1.867	1.883	1.899	1.915	1.929	1.943
	Gas Committed to Interstate Commerce on 11/8/78														
104	Post-1974 gas (all producers)	1.630	1.774	1.786	1.799	1.812	1.825	1.839	1.853	1.867	1.883	1.899	1.915	1.929	1.943
104	1973-1974 biennium gas														
	Small producers	1.379	1.500	1.510	1.521	1.532	1.543	1.555	1.567	1.579	1.592	1.605	1.619	1.631	1.643
	Large producers	1.058	1.152	1.160	1.168	1.176	1.184	1.193	1.202	1.211	1.221	1.231	1.241	1.250	1.259
106(a)	Interstate rollover gas c/														
	Small producers	0.702	0.715	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728	0.728
	Large producers	0.603	0.654	0.659	0.664	0.669	0.674	0.679	0.684	0.689	0.695	0.701	0.707	0.712	0.717
104	Replacement contract or recompletion gas														
	Small producers	0.771	0.841	0.847	0.853	0.859	0.865	0.872	0.879	0.886	0.893	0.901	0.909	0.916	0.923
	Large producers	0.593	0.643	0.647	0.652	0.657	0.662	0.667	0.672	0.677	0.683	0.689	0.695	0.700	0.705
104	Flowing Gas														
	Small producers	0.393	0.428	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.453	0.457	0.461	0.464	0.467
	Large producers	0.332	0.359	0.361	0.364	0.367	0.370	0.373	0.376	0.379	0.382	0.385	0.388	0.391	0.394
104	Certain Permian Basin Gas														
	Small producers	0.462	0.501	0.504	0.508	0.512	0.516	0.520	0.524	0.528	0.532	0.536	0.541	0.545	0.549
	Large producers	0.405	0.440	0.443	0.446	0.449	0.452	0.455	0.459	0.463	0.467	0.471	0.475	0.479	0.483
104	Certain Rocky Mountain Gas														
	Small producers	0.462	0.501	0.504	0.508	0.512	0.516	0.520	0.524	0.528	0.532	0.536	0.541	0.545	0.549
	Large producers	0.393	0.428	0.431	0.434	0.437	0.440	0.443	0.446	0.449	0.453	0.457	0.461	0.464	0.467
104	Appalachian area gas														
	North subarea contracts dated after 10/7/69	0.368	0.400	0.403	0.406	0.409	0.412	0.415	0.418	0.421	0.425	0.429	0.433	0.436	0.439
	Other contracts	0.344	0.376	0.379	0.382	0.385	0.388	0.391	0.394	0.397	0.400	0.403	0.406	0.409	0.412
	Minimum rate gas (all producers)	0.203	0.218	0.220	0.222	0.224	0.226	0.228	0.230	0.232	0.234	0.236	0.238	0.240	0.242

Source: Federal Energy Regulatory Commission.

a/ Section 105(b)(1)(B) establishes a maximum lawful price of $1.00/MMBtu (as of April 1977) plus the monthly inflation adjustment for intrastate rollover contracts if this price is higher than the maximum price paid under the expired contract, adjusted for inflation.

b/ By Order No. 99 issued 8/15/80, the maximum price for gas produced from tight formations was set at the lesser of the negotiated contract price or the Section 103 price. The maximum lawful price for tight formation gas applies on or after 7/16/79.

c/ The price interstate rollover gas is the higher of the listed price or the just and reasonable price under the expired contract, as adjusted for inflation.

TABLE A-6 Con't
Maximum Lawful Prices
($/MM Btu)

NGPA Section	Category of Gas	Jan. 1981	Feb. 1981	Mar. 1981	Apr. 1981	May 1981	June 1981	July 1981	Aug. 1981	Sept. 1981	Oct. 1981	Nov. 1981	Dec. 1981	Jan. 1982
102	New natural gas Certain OCS gas	$2.667	$2.698	$2.729	$2.761	$2.787	$2.813	$2.840	$2.863	$2.886	$2.909	$2.940	$2.971	$3.003
103	New onshore production wells	2.363	2.384	2.406	2.428	2.444	2.460	2.476	2.488	2.501	2.514	2.533	2.552	2.572
106(b)(1)-(b)	Intrastate rollover gas (alternative maximum lawful price) a/	1.349	1.361	1.373	1.385	1.394	1.403	1.412	1.419	1.426	1.433	1.444	1.455	1.466
107(c)(5)	High-cost gas	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/	b/
	Gas from tight formations	4.726	4.766	4.812	4.856	4.888	4.920	4.952	4.976	5.002	5.028	5.066	5.104	5.144
108	Stripper well	2.855	2.888	2.922	2.956	2.984	3.012	3.041	3.066	3.091	3.116	3.149	3.183	3.217
109	Not otherwise covered	1.957	1.975	1.993	2.011	2.024	2.037	2.050	2.060	2.070	2.080	2.096	2.112	2.128
	Gas Committed to Interstate Commerce on 11/8/78													
104	Post-1974 gas (all producers)	1.957	1.975	1.993	2.011	2.024	2.037	2.050	2.060	2.070	2.080	2.096	2.112	2.128
104	1973-1974 biennium gas													
	Small producers	1.655	1.670	1.685	1.700	1.711	1.722	1.733	1.742	1.751	1.760	1.773	1.787	1.801
	Large producers	1.266	1.279	1.291	1.303	1.311	1.319	1.327	1.334	1.341	1.348	1.358	1.368	1.378
106(a)	Interstate rollover gas c/													
	Small producers	0.741	0.741	0.741	0.743	0.748	0.753	0.758	0.762	0.766	0.770	0.776	0.782	0.788
	Large producers	0.722	0.729	0.736	0.743	0.748	0.753	0.758	0.762	0.766	0.770	0.776	0.782	0.788
104	Replacement contract or recompletion gas													
	Small producers	0.930	0.938	0.946	0.955	0.961	0.967	0.973	0.978	0.983	0.988	0.996	1.004	1.012
	Large producers	0.710	0.716	0.722	0.729	0.734	0.739	0.744	0.748	0.752	0.756	0.762	0.768	0.774
104	Flowing Gas													
	Small producers	0.470	0.474	0.478	0.482	0.485	0.488	0.491	0.493	0.495	0.497	0.501	0.505	0.509
	Large producers	0.397	0.401	0.405	0.409	0.412	0.415	0.418	0.420	0.422	0.424	0.427	0.430	0.433
104	Certain Permian Basin Gas													
	Small producers	0.553	0.558	0.563	0.568	0.572	0.576	0.580	0.583	0.586	0.589	0.594	0.599	0.604
	Large producers	0.487	0.491	0.495	0.499	0.502	0.505	0.508	0.511	0.514	0.517	0.521	0.525	0.529
104	Certain Rocky Mountain Gas													
	Small producers	0.553	0.558	0.563	0.568	0.572	0.576	0.580	0.583	0.586	0.589	0.594	0.599	0.604
	Large producers	0.470	0.474	0.478	0.482	0.485	0.488	0.491	0.493	0.495	0.497	0.501	0.505	0.509
104	Appalachian area gas													
	North subarea contracts dated after 10/7/69	0.442	0.446	0.450	0.454	0.457	0.460	0.463	0.465	0.467	0.469	0.473	0.477	0.481
	Other contracts	0.415	0.419	0.423	0.427	0.430	0.433	0.436	0.438	0.440	0.442	0.445	0.448	0.451
	Minimum rate gas (all producers)	0.244	0.246	0.248	0.250	0.252	0.254	0.256	0.257	0.258	0.259	0.261	0.263	0.265

Source: Federal Energy Regulatory Commission.

a/ Section 106(b)(1)(B) establishes a maximum lawful price of $1.00/MMBtu (as of April 1977) plus the monthly inflation adjustment for intrastate rollover contracts if this price is higher than the maximum price paid under the expired contract, adjusted for inflation.

b/ By Order No. 99 issued 8/15/80, the maximum price for gas produced from tight formations was set at the lesser of the negotiated contract price or the Section 103 price. The maximum lawful price for tight formation gas applies on or after 7/16/79.

c/ The price interstate rollover gas is the higher of the listed price or the just and reasonable price under the expired contract, as adjusted for inflation.

TABLE A-7
TIGHT FORMATIONS

Approved By the FERC

State	County	Date Submitted to FERC	Date Issued	Formation	Average Depth of Formation (Feet)
Alabama	Jefferson, Walker, Tuscaloosa	3/25/81	6/25/81	Basal Pennsylvania Sand	-
Colorado	Boulder, Adams, Larimer, Weld	7/09/80	1/23/81	Wattenberg J	7,600
	Rio Blanco	10/03/80	12/17/80	Mancos B	2,500
	Rio Blanco	10/03/80	12/17/80	Fort Union	4,700
	Mesa	10/03/80	12/17/80	Mesaverde	3,500
	Cheyenne, Kit Carson, Lincoln, Logan, Phillips, Sedgwick, Washington, Yuma	8/28/80	3/30/81	Niobrara	1,300
	Rio Blanco, Garfield	8/29/80	11/14/80	Mancos B	3,475
	Rio Blanco, Garfield	1/23/81	4/29/81	Mancos B	3,500
	La Plata	11/10/80	6/03/81	Dakota	7,600
	La Plata, Archuleta	11/10/80	7/08/81	Dakota	7,600
	La Plata, Archuleta	11/10/80	7/08/81	Sanastee	7,600
	Mesa, Garfield	11/10/80	7/03/81	Cozzette	2,870
	Mesa, Garfield	11/10/80	7/03/81	Corcoran	2,673
	Kiowa	1/26/81	7/24/81	Morrow	4,500
	Mesa	10/03/80	5/28/81	Lower Mesaverde	3,850
	Mesa, Garfield	1/26/81	6/10/81	Cozzette	7,477
	Mesa, Garfield	1/26/81	6/10/81	Corcoran	7,477
	Mesa, Garfield, Rio Blanco	4/23/81	6/23/81	Dakota	5,480
	Mesa, Garfield	4/23/81	11/20/81	Dakota	7,705
	Weld	8/28/81	12/16/81	Sussex	4,400
Louisiana	Union Parish	10/10/80	1/27/81	Arkadelphia	2,038
	Bossier Parish	12/31/80	4/29/81	Haynesville	10,360
	Caddo, Bossier Parish	1/15/81	6/17/81	Cotton Valley	8,500
	Claiborne, Lincoln Parish	3/12/81	8/17/81	Grey Sand,Reservoir A	12,840
Mississippi	Clay	3/30/81	9/18/81	Mississippian (Sea Sand)	8,864
	Jefferson Davis	3/06/81	9/18/81	Upper Hosston	14,000
New Mexico	Lea	10/09/80	12/17/80	Austin-Mississippian	13,250
	Lea	1/15/81	3/30/81	Atoka	11,500
	DeBaca, Chaves	3/31/81	6/10/81	Abo Formation	3,650
	San Juan, Rio Arriba	3/23/81	6/10/81	Fruitland	2,800
	San Juan, Rio Arriba	9/02/81	12/03/81	Dakota	6,350
	San Juan, Rio Arriba	9/16/81	12/16/81	Pictured Cliffs	3,200
Ohio	Lorain, Lawrence	12/09/80	3/30/81	Clinton Sandstone	2,500
Oklahoma	Washita	8/25/81	11/20/81	Atoka	14,000
Pennsylvania	Erie, Crawford, Mercer Venango, Warren	6/08/81	9/30/81	Medina	3,000
Texas		7/11/80	10/24/80	Cotton Valley	9,000
	Crockett, Edwards, Schleicher, Sutton, Terrell, Val Verde	9/22/80	12/17/80	Canyon Sandstone	4,775
	Reagan	10/14/80	1/21/81	Cisco Sandstone	8,260
	Hidalgo	10/14/80	1/23/81	Vicksburg S-T	12,305
	Hidalgo	10/14/80	1/23/81	Vicksburg T	13,595
	Montgomery, Grimes	11/19/80	2/05/81	Midway	11,746
	Austin, Wharton, Colorado	12/11/80	2/19/81	Lower Wilcox	11,700
	Webb, Zapata	3/02/81	6/10/81	Wilcox Lobo Sandstone	5,840
	Cherokee	4/01/81	6/10/81	Travis Peak	9,850
	Dewitt, Karnes, Lavaca	3/30/81	9/18/81	Edwards Limestone	13,460
	Freestone, Leon, Limestone	7/24/81	10/08/81	Travis Peak	8,739
	Willacy	7/13/81	11/20/81	Frio Formation	9,635
	Webb	7/24/81	12/16/81	Wilcox	11,085
Utah	Uintah	5/11/81	7/28/81	Wasatch/Mesaverde	4,539
	Uintah, Grand	5/20/81	9/18/81	Mancos B	3,475
Virginia	Dickenson, Lee, Scott, Wise, Russell, Buchanan, Tazewell	7/30/81	11/20/81	Berea Sandstone	4,697
West Virginia	Fayette, Raleigh	2/20/81	6/23/81	Ravencliff, Injun-Squaw, Weir, Berea	-
Wyoming	Sweetwater, Uinta, Lincoln	8/05/80	11/14/80	Frontier	11,100
	Sweetwater, Carbon	8/07/80	11/14/80	Mesaverde	10,125
	Sublette	11/07/80	1/27/81	Fort Union	7,250
	Sweetwater	5/05/81	7/28/81	Fox Hills	7,412
	Carbon	6/08/81	9/18/81	Frontier	5,500
	Lincoln, Sweetwater, Sublette	6/08/81	9/18/81	Bear River	9,400
	Lincoln, Sweetwater, Sublette	6/08/81	9/18/81	Frontier	9,000

TABLE A-7 (con't)
TIGHT FORMATIONS

Pending Before the FERC

State	County	Date Submitted to FERC	Formation	Average Depth of Formation (Feet)
Colorado	Garfield	9/10/81	Mesaverde	4,475
	La Plata, Archuleta	9/15/81	Dakota	7,950
	La Plata, Archuleta	9/15/81	Mesaverde	5,380
	Rio Blanco	9/25/81	Upper Mancos	1,800
	Garfield	9/30/81	Wasatch	1,767
Louisiana	Claiborne, Webster	10/05/81	Smackover C	11,290
	De Soto	11/13/81	James Lime	5,072
	Bossier	10/01/81	Haynesville	10,360
Nebraska	Chase, Deuel, Dundy, Hitchcock, Keith Perkins, Frontier, Cheyenne, Garden	11/06/81	Niobrara	2,450
New Mexico	Rio Arriba	7/30/81	Mesaverde	5,563
New York	Cattaraugus, Chautauqua	9/21/81	Medina Group	4,000
Texas	Bastrop	7/17/81	Cotton Valley	11,820
	Webb	8/25/81	Navarro	7,227
	Starr	10/27/81	Vicksburg	6,000
	Pecos, Loving	11/04/81	Wolfcamp	11,384
	Wharton	11/06/81	Lower Wilcox	13,900
	Reagan, Sterling	11/13/81	Cisco Sandstone	8,030
	Starr	11/13/81	Wilcox	9,750
	Dimmit, Webb	12/07/81	Olmos Formation	4,145
	Live Oak	12/07/81	Massive "A" Sand Formation	11,600
Utah	Grand, Unitah	8/31/81	Dakota	6,034
	Grand, Unitah	8/31/81	Morrison	6,315

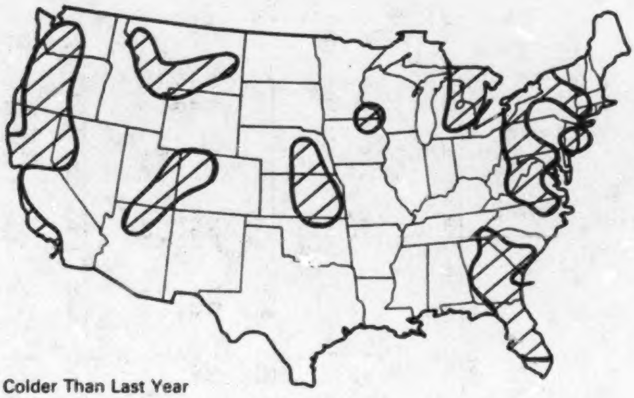
TABLE A-8
COMPETITIVE FUEL PRICES
(MM Btu Basis)

		Natural Gas			No. 2 Fuel Oil		No. 6 High Sulfur		Electricity
		Wellhead	Utility Boiler	Retail	Wholesale	Retail	Wholesale	Retail	Average
1976	Average	$0.58	$1.06	$1.85	$2.34	$2.91	$1.71	$1.83	$ 9.06
1977	Average	0.79	1.33	2.26	2.65	3.30	1.90	2.10	10.02
1978	Average	0.91	1.48	2.63	2.77	3.54	1.83	2.03	10.81
1979	January	1.02	1.55	2.93	3.02	3.85	2.03	2.25	10.67
	February	1.05	1.65	2.96	3.19	4.04	2.18	2.33	10.73
	March	1.10	1.69	3.01	3.37	4.22	2.36	2.54	10.99
	April	1.11	1.70	3.00	3.53	4.38	2.47	2.64	11.17
	May	1.15	1.82	3.15	3.77	4.60	2.50	2.73	11.40
	June	1.17	1.84	3.20	4.08	4.95	2.83	2.86	11.78
	July	1.20	1.84	3.28	4.38	5.29	3.05	3.16	12.13
	August	1.24	1.87	3.31	4.63	5.62	3.02	3.23	12.22
	September	1.24	1.89	3.41	4.86	5.81	3.12	3.32	12.25
	October	1.28	1.96	3.53	4.88	5.90	3.32	3.43	11.40
	November	1.29	1.87	3.48	4.95	6.00	3.50	3.63	11.99
	December	1.31	1.90	3.52	5.08	6.15	3.75	3.89	12.16
	AVERAGE	1.18	1.80	3.23	3.80	4.70	2.81	2.97	11.55
1980	January	1.34	2.01	3.55	5.39	6.51	3.88	4.17	12.28
	February	1.40	2.11	3.58	5.66	6.83	3.71	4.21	12.42
	March	1.41	2.15	3.68	5.76	6.96	3.36	4.03	12.89
	April	1.43	2.10	3.68	5.81	6.98	3.04	3.64	13.13
	May	1.45	2.18	3.94	5.84	6.97	3.22	3.78	13.57
	June	1.45	2.16	3.95	5.91	7.02	3.25	3.83	14.21
	July	1.53	2.37	4.11	5.95	7.02	3.38	3.80	14.74
	August	1.52	2.46	4.13	5.94	7.02	3.54	3.98	14.86
	September	1.56	2.46	4.17	5.95	7.03	3.57	4.03	14.74
	October	1.59	2.53	4.21	6.00	7.08	3.80	4.24	14.50
	November	1.62	2.38	3.96	6.17	7.25	4.43	4.80	14.35
	December	1.61	2.33	4.03	6.55	7.64	4.74	5.14	14.39
	AVERAGE	1.49	2.28	3.92	5.89	7.01	3.66	4.15	13.84
1981	January	1.68	2.59	4.07	7.07	8.17	4.95	5.35	14.53
	February	1.71	2.69	4.09	7.60	8.85	5.06	5.73	14.62
	March	1.72	2.73	4.17	7.62	9.00	5.05	5.74	15.00
	April	1.74	2.83	4.22	7.54	8.88	4.86	5.52	15.24
	May	1.77	2.93	4.57	7.46	8.80	4.84	5.43	15.73
	June	1.79	2.97	4.58	7.38	8.67	4.13	4.94	16.38
	July	1.81	2.98	4.60	7.36	8.68	4.22	4.86	16.88
	August	1.82	3.00	4.67	7.33	8.56	4.30	4.85	16.94

SOURCE: DOE

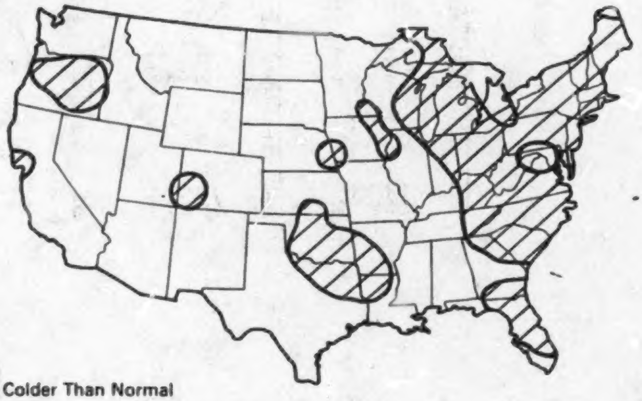
Heating Degree-Days Accumulated from July 1 through November 29

Departure from Last Year



▨ Colder Than Last Year

Departure from Normal



▨ Colder Than Normal

Source: DOE

PRODUCER CONTRACT PRICES
(¢ Per Gallon)

1979	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Gas Plants													
Ethane	14.2	15.5	16.2	14.9	15.4	15.7	16.7	16.2	16.9	17.0	21.6	20.5	16.7
Propane	18.0	18.5	19.3	21.1	25.2	33.2	28.9	31.1	36.0	36.3	38.6	45.2	29.3
Butane	29.5	31.4	25.4	33.0	40.4	57.6	71.4	45.2	57.8	64.4	65.5	76.0	49.6
Iso-Butane	37.2	34.0	52.5	57.0	64.2	77.5	100.3	88.9	91.1	92.1	94.9	105.3	74.6
Natural Gasoline	43.4	44.0	54.4	51.9	61.8	73.6	78.3	67.4	67.6	67.9	73.8	91.0	64.6

1980	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Gas Plants													
Ethane	24.9	25.8	26.0	26.4	31.4	28.3	25.7	27.3	26.7	27.0	27.0	28.1	28.1
Propane	43.9	39.0	37.6	37.0	43.3	39.2	38.6	38.6	39.1	41.8	43.8	43.6	43.6
Butane	71.9	62.7	60.9	56.0	49.1	53.9	41.8	41.8	47.6	51.3	57.5	63.5	55.1
Iso-Butane	100.0	92.1	89.0	77.7	86.4	85.1	66.8	66.8	65.6	68.2	87.6	88.1	81.7
Natural Gasoline	95.6	76.2	73.1	75.1	73.8	70.9	67.4	67.4	59.8	61.0	70.8	82.3	73.0

1981	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Gas Plants													
Ethane	27.6	29.2	30.1	30.4	31.2	31.4	33.0	30.4	30.6	28.6	27.7		
Propane	43.7	44.6	46.5	46.1	46.1	44.9	43.2	43.4	44.3	44.0	44.8		
Butane	56.5	56.8	53.3	53.6	54.2	52.8	53.7	69.9	63.1	62.0	60.3		
Iso-Butane	85.7	86.3	74.9	67.6	64.3	58.4	63.4	62.9	75.8	75.4	74.6		
Natural Gasoline	75.3	72.1	68.4	77.0	77.1	75.8	76.9	81.2	81.2	82.9	85.0		

TABLE A-11
THERMAL CONVERSION FACTORS

Product	Unit of Measurement	Btu's	MCF's
Residual Fuel Oil	Btu/barrel	6,287,000	6.23
No. 2 Fuel Oil	Btu/barrel	5,858,000	5.83
Crude Oil	Btu/barrel	5,800,000	5.80
Naphtha	Btu/barrel	5,248,000	5.25
Natural Gasoline	Btu/barrel	4,620,000	4.62
Butane	Btu/barrel	4,326,000	4.33
Butane-Propane	Btu/barrel	4,130,000	4.13
Isobutane	Btu/barrel	3,974,000	3.97
Propane	Btu/barrel	3,836,000	3.84
Ethane	Btu/barrel	3,082,000	3.08
Natural Gas	Btu/MCF	1,000,000	1.00
Electricity	KWH/MCF	293	1.00

SOURCE: DOE